

A Perception-Driven Approach to Supervised Dimensionality Reduction for Visualization (Supplemental Material)

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ABSTRACT

This supplemental material file provides additional information for the TVCG paper “A Perception-Driven Approach to Supervised Dimensionality Reduction for Visualization.” Specifically, it provides

- 1) the dDSC, dKNNG, GONG and SC scores of the scatterplots generated by all ten DR methods including PD and PK, which are our perception-driven DR with the existing the DSC measure (PD) and with the KNNG measure (PK);
- 2) the class ratings of the scatterplots generated by the eight DR methods specified by the experts;
- 3) an additional analysis of how our approaches PDK and PDD, as well as the existing LDA handle cases with randomly assigned class labels; and
- 4) the screenshots of all projections along with their GONG and SC values.

I. FULL LIST OF dDSC, dKNNG, GONG AND SC SCORES

To demonstrate the effectiveness of PDD and PDK, we compared them with eight existing DR techniques (see paper). To evaluate the scatter plots generated by ten DR techniques, we use four measures: GONG, SC, (as in the paper), as well as our introduced measures dDSC and dKNNG (not in the paper). Note that PDD and PDK definitely have advantages over other methods in terms of dDSC and dKNNG, since they are designed to maximize dDSC and dKNNG. Figure 1 presents the scores of dDSC, dKNNG, GONG and SC with heatmaps, where blue cells indicate large scores (well-separated) and white cells indicate small scores (not separated at all). The average score within each cell in both heatmaps in Figure 1 is encoded with a white-to-blue color ramp, where blue is better. White cells indicate classes that are not-well-separated, and blue cells indicate the classes are well-separated in this projection.

The columns of the heatmaps are ordered in the same way as the boxplots shown in Figure 8 in the paper. In terms of lines (rows), the three categories of the data sets are ordered from very realistic to highly artificial and we employ the same ordering consistently throughout the paper. For consistency with Figure 3, the rows within each category (real, entangled and gaussian) are ordered by the number of classes in each data.

We can see that PDK and PDD produce similarly higher GONG values than the others for most data, while PDD and LDA behave similarly on SC values. No matter GONG or SC measures, KDA, NCA and PCA all perform poorly. We assume the reason for KDA and NCA is that most data can be linearly separated, whereas the quadratic kernel and the softmax function used by KDA and NCA destroy the separability. This hypothesis is also confirmed by RAND, whose GONG values are similar to LDA. On the other hand, it is not surprising that PCA does not work well because it does not have any discriminative ability. Only the *entangled* datasets show a different pattern, where t-SNE produces much higher GONG and SC values than all the other methods. In all, we can see that PDD and PDK are better than the other methods for most data, while PD and PK are worse than PDD and PDK for most data. To facilitate the comparison between different DR methods, we summarize the scores with boxplots as shown in Figure 2, which clearly demonstrate the advantages of PDD and PDK.

II. FULL RESULTS OF USER STUDY RATINGS

Furthermore, we evaluate the results of human class ratings, collected from a carefully-designed user study. Since PD and PK are worse than PDD and PDK, we did not run the user study with their results. For the results of the other eight methods, the averaged class ratings are visualized with heatmaps by using a white-to-blue color ramp, with 1 in white (not separable), to 5 in dark blue (nicely separable). Figure 3 shows the results, where each row represents one dataset and the color of a cell indicates the average score of the three expert coders assigned for one specific class. To maintain legibility, we only show 92 datasets (out of 93) who have 15 or fewer number of classes, since the absent dataset has 28 classes, which are too many for humans to explore. We can see that PDD, PDK, LDA and t-SNE are the top four methods in terms of number of dark blue cells. To investigate how PDD and PDK outperform existing DR techniques, we summarize the results with boxplots as shown in Figure 11 in the paper.

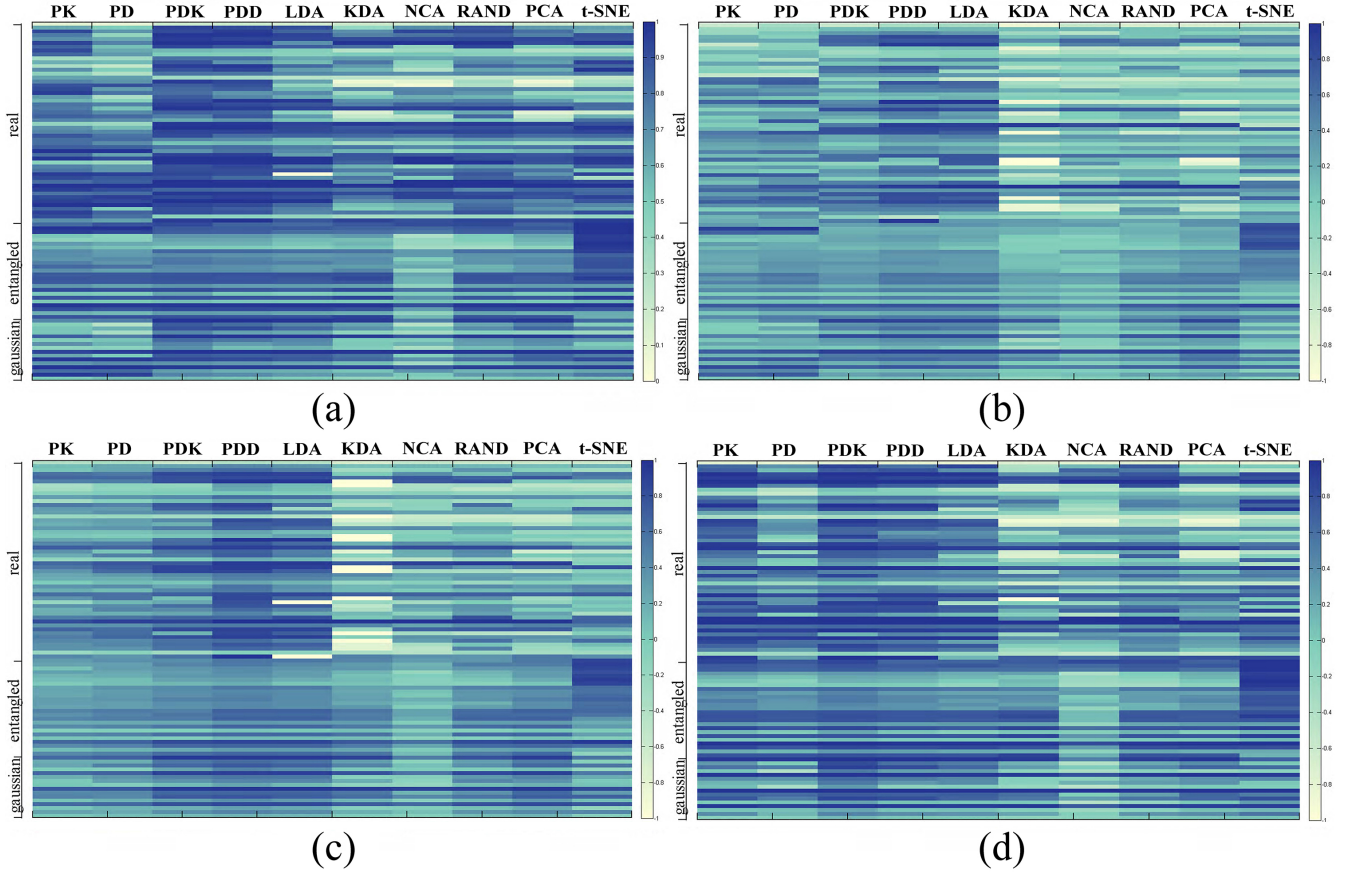


Fig. 1. The above heatmaps present the values of GONG (a), SC (b), dDSC (c), and dKNNG (d) of projections generated by ten different DR methods for each of the 93 datasets. Each row represents one dataset, and each column a DR method.

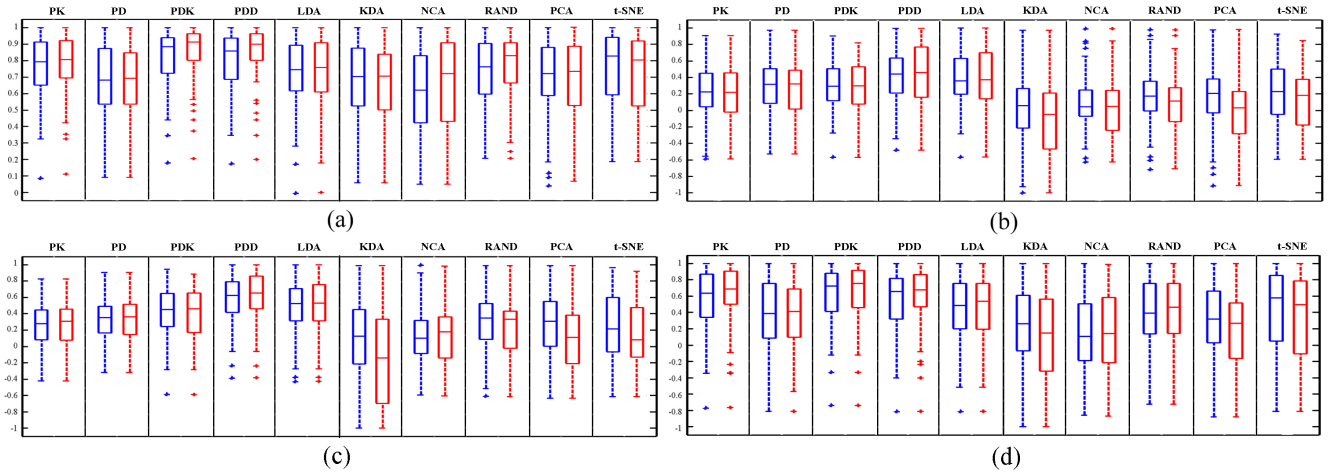


Fig. 2. The boxplots summarize the values of GONG (a), SC (b), dDSC (c), and dKNNG (d) shown in Figure 1 of the ten DR methods, where the blue boxplots show the score distributions over all 93 datasets and the red boxplots describe the score of the 53 real datasets only.

III. ANALYSIS OF RANDOMLY ASSIGNED CLASS LABELS

We also test whether our approach can make bad clusterings to be better separated than LDA. It is achieved with the following procedure. Taking a real high-dimensional data set, we randomly assign imbalanced class labels to all data points and then perform different DR methods to them. Figure 4 shows the results of two examples, where the imbalance ratio of the data sets shown in the above and below rows are 4.4 and 13.1, respectively. We can see that neither LDA nor our PDD and PDK lead to perfect separable results. This is expected, as the data are also not separable in the original high-dimensional space, and hence should also not show up to be separable in low-dimensional space. The labels are randomly assigned, which cannot reflect the data inherent structure. Note, however, that although all methods fail to separate the classes, the GONG and SC scores produced by PDD and PDK are still better than the ones produced by LDA. This further supports our findings that

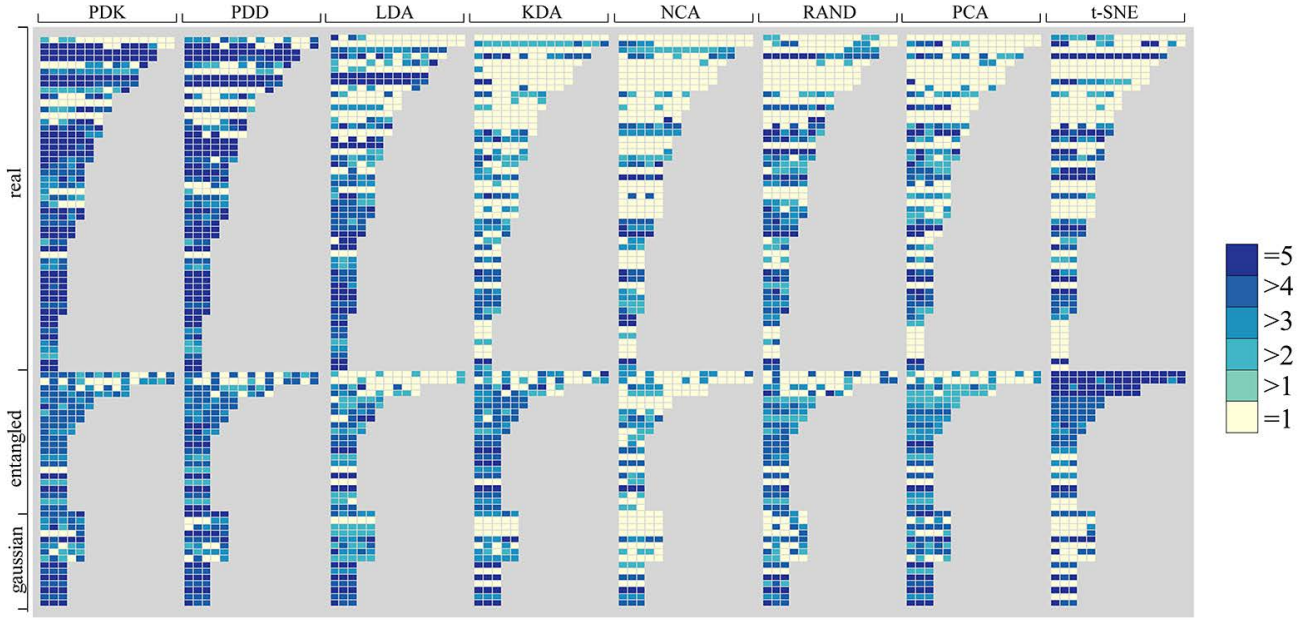


Fig. 3. The above heatmaps show the averaged class-wise ratings of three expert coders, where the ratings range from 1 (not separated at all) to 5 (well-separated).

our perception-driven approach can separate class structure more effectively in 2D space than previous methods. If the classes are not separable at all though, our methods and existing methods do not incorrectly separate them.

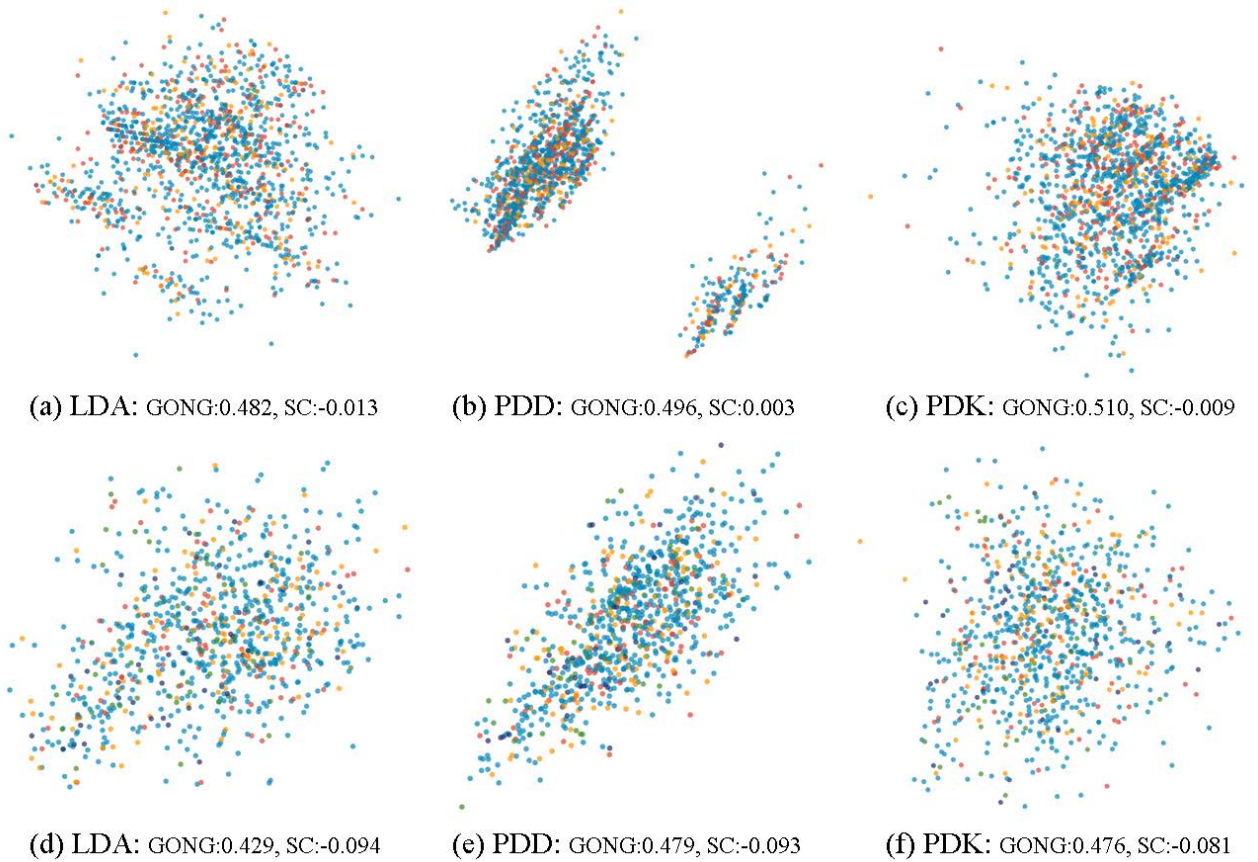


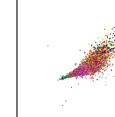
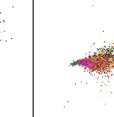
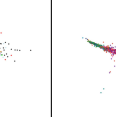
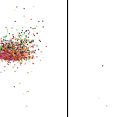
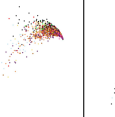
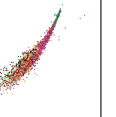


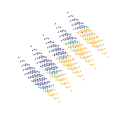
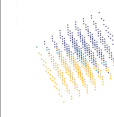
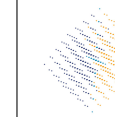
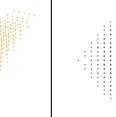
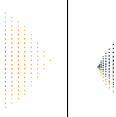
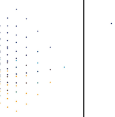
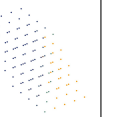


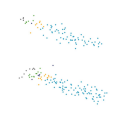

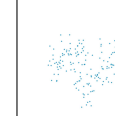
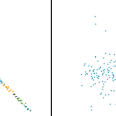
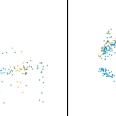
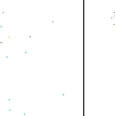
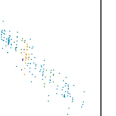

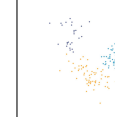
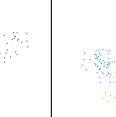
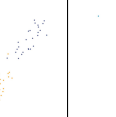
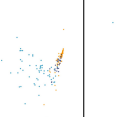
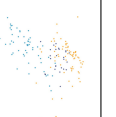


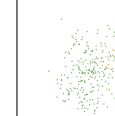
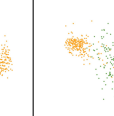
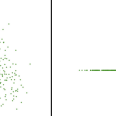
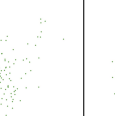
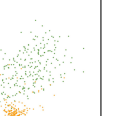


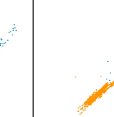
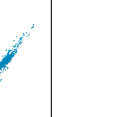
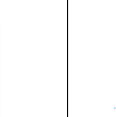
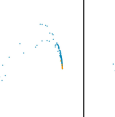
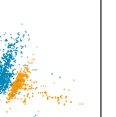




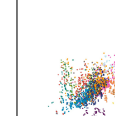
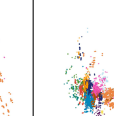
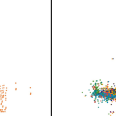

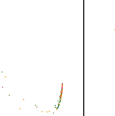
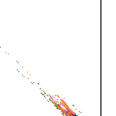
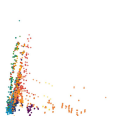


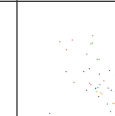
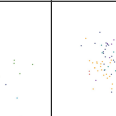
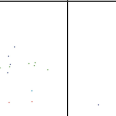
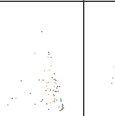
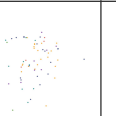
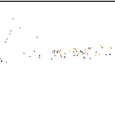
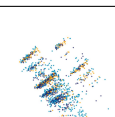
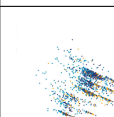
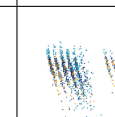
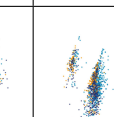
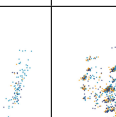
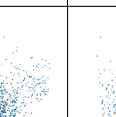
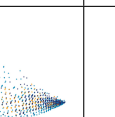
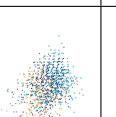
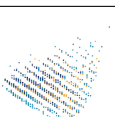
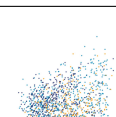
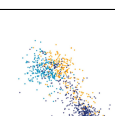
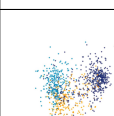

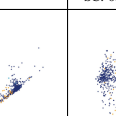
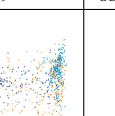
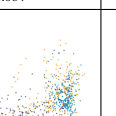
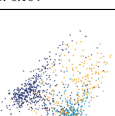



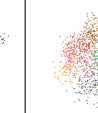
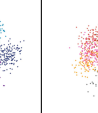
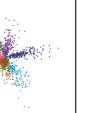


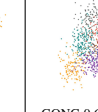



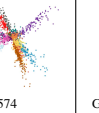
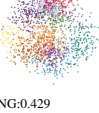
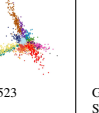
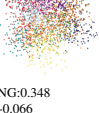


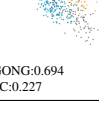
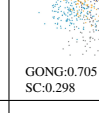
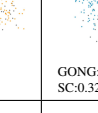

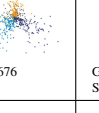
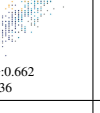
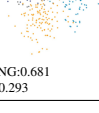
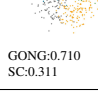
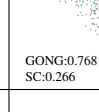
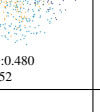

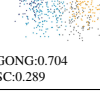
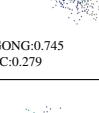
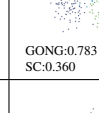
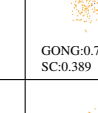
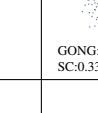

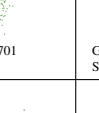
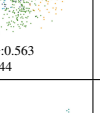
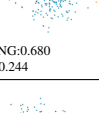
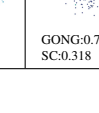
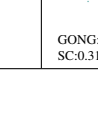
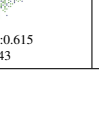
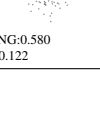
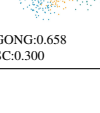


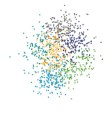


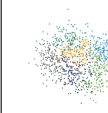
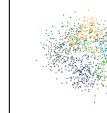
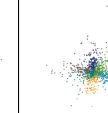
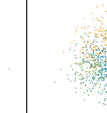
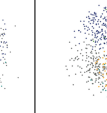
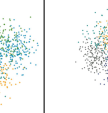
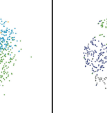



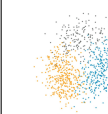
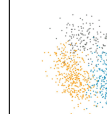
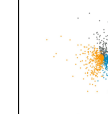
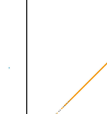
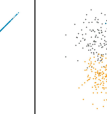
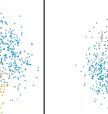
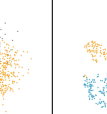




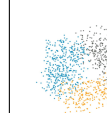
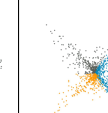
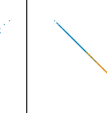
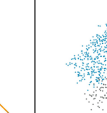
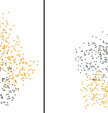
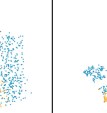



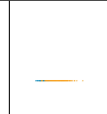
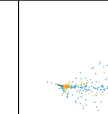
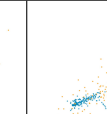
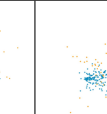
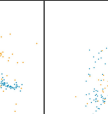


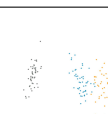
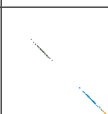
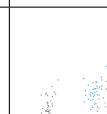

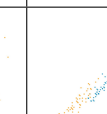
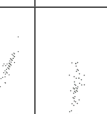
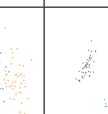
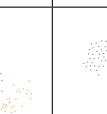



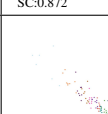
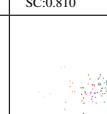
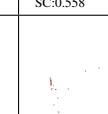
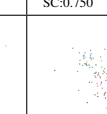
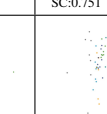
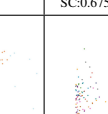
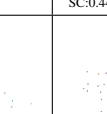
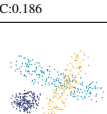


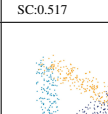
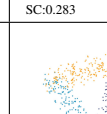
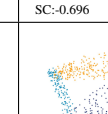
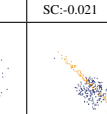
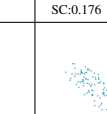
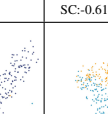
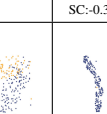
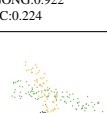

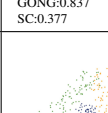
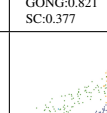
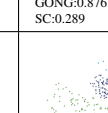
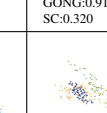
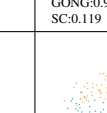
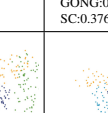
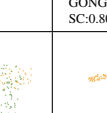
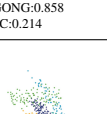
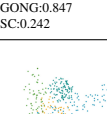
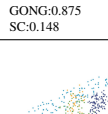
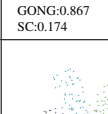
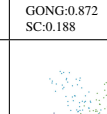
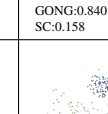
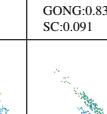
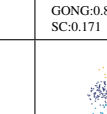

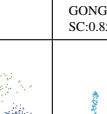
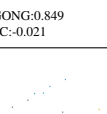

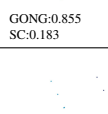
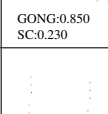
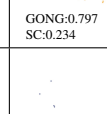
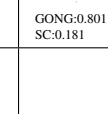
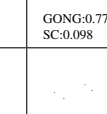
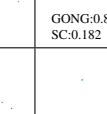
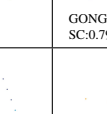
Fig. 4. Comparing the class separation quality of LDA, PDD, and PDK (left to right) on two datasets with randomly assigned class labels, where the resultant GONG and SC scores for each data are shown next to each subfigure.







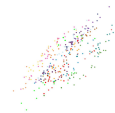



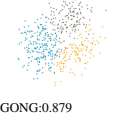




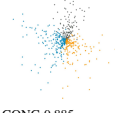

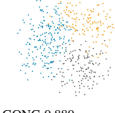



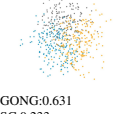
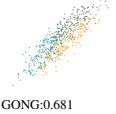


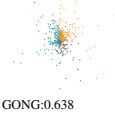
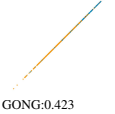




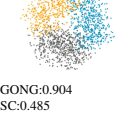
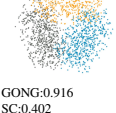
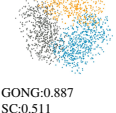
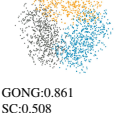
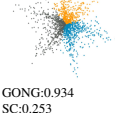
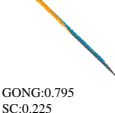


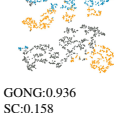
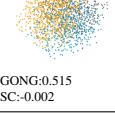

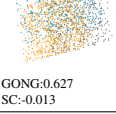
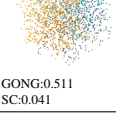
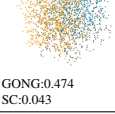
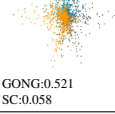
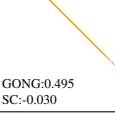
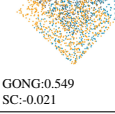
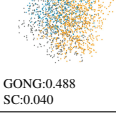
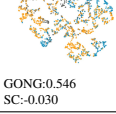



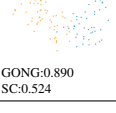
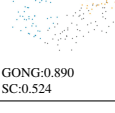


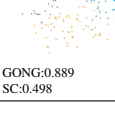

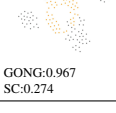

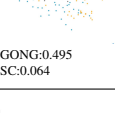



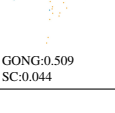
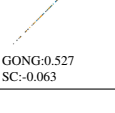


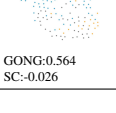
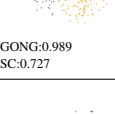

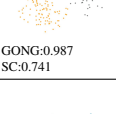
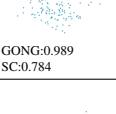
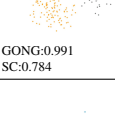
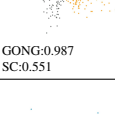
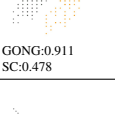
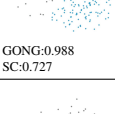
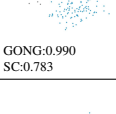

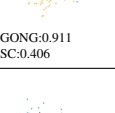

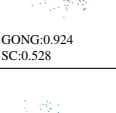


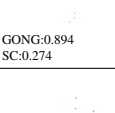
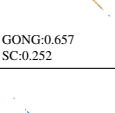
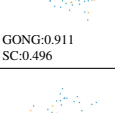


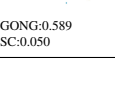
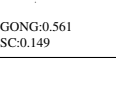
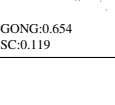
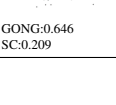
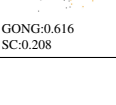
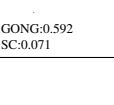
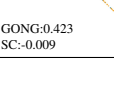
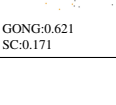
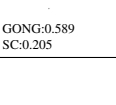
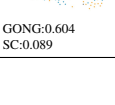
IV. SCREENSHOTS OF ALL PROJECTIONS
















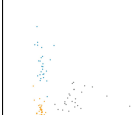






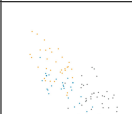
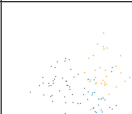
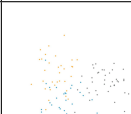

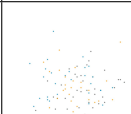
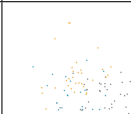





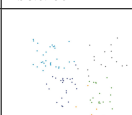

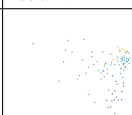



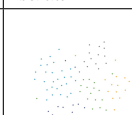




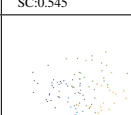
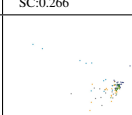

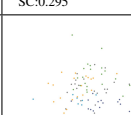
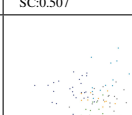
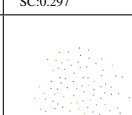
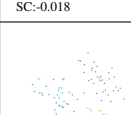

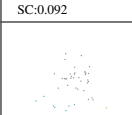
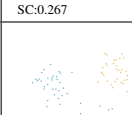
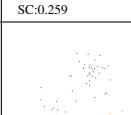
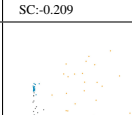

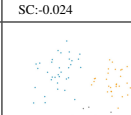
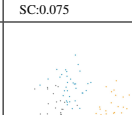
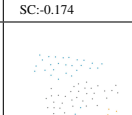
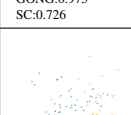
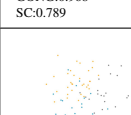

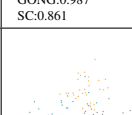

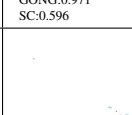
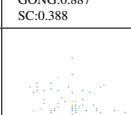
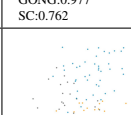

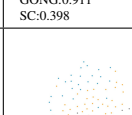
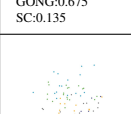
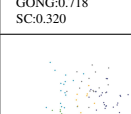
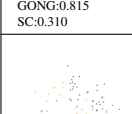
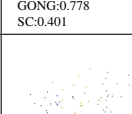
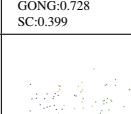
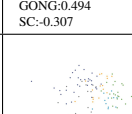
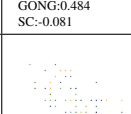
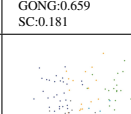
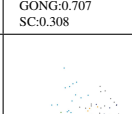
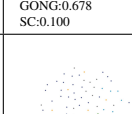
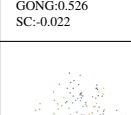
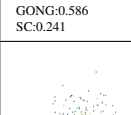
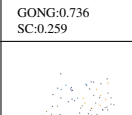

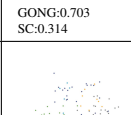
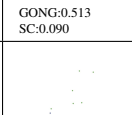
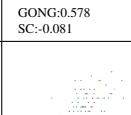
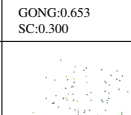

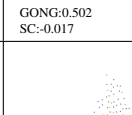
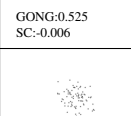
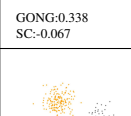
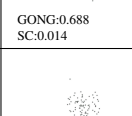
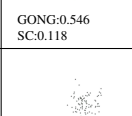
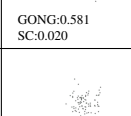
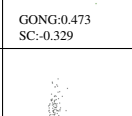
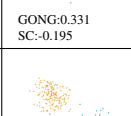
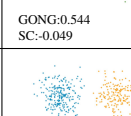
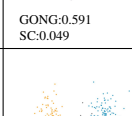
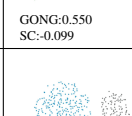
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abalone points:4154 dim:7 classes:28	 GONG:0.110 SC:-0.585	 GONG:0.092 SC:-0.305	 GONG:0.204 SC:-0.567	 GONG:0.200 SC:-0.341	 GONG:0.179 SC:-0.283	 GONG:0.197 SC:-0.871	 GONG:0.193 SC:-0.575	 GONG:0.207 SC:-0.706	 GONG:0.185 SC:-0.699	 GONG:0.200 SC:-0.500
balance-sc points:625 dim:4 classes:3	 GONG:0.805 SC:0.122	 GONG:0.637 SC:0.133	 GONG:0.948 SC:0.100	 GONG:0.910 SC:0.121	 GONG:0.910 SC:0.141	 GONG:0.401 SC:0.099	 GONG:0.710 SC:0.148	 GONG:0.889 SC:0.068	 GONG:0.670 SC:0.109	 GONG:0.647 SC:0.161
bbdm13 points:200 dim:13 classes:5	 GONG:0.767 SC:-0.061	 GONG:0.535 SC:0.011	 GONG:0.917 SC:0.304	 GONG:0.962 SC:0.440	 GONG:0.835 SC:0.317	 GONG:0.695 SC:-0.246	 GONG:0.932 SC:-0.446	 GONG:0.907 SC:0.060	 GONG:0.800 SC:-0.030	 GONG:0.622 SC:-0.241
boston points:155 dim:13 classes:3	 GONG:0.979 SC:0.617	 GONG:0.913 SC:0.522	 GONG:0.988 SC:0.673	 GONG:0.989 SC:0.840	 GONG:0.942 SC:0.831	 GONG:0.747 SC:0.073	 GONG:0.788 SC:0.243	 GONG:0.847 SC:0.041	 GONG:0.744 SC:0.234	 GONG:0.896 SC:0.426
breast-can points:454 dim:9 classes:2	 GONG:0.952 SC:0.691	 GONG:0.918 SC:0.668	 GONG:0.968 SC:0.703	 GONG:0.935 SC:0.768	 GONG:0.931 SC:0.768	 GONG:0.921 SC:0.407	 GONG:0.916 SC:0.659	 GONG:0.923 SC:0.518	 GONG:0.934 SC:0.660	 GONG:0.881 SC:0.356
cars03Crop points:7404 dim:22 classes:2	 GONG:0.997 SC:0.403	 GONG:0.999 SC:0.479	 GONG:1.000 SC:0.634	 GONG:0.999 SC:0.948	 GONG:0.693 SC:0.947	 GONG:0.990 SC:0.012	 GONG:0.995 SC:0.497	 GONG:0.997 SC:0.601	 GONG:0.918 SC:0.038	 GONG:0.980 SC:0.600
cars03Crop points:7404 dim:22 classes:12	 GONG:0.947 SC:-0.553	 GONG:0.743 SC:-0.106	 GONG:0.934 SC:-0.147	 GONG:0.872 SC:0.065	 GONG:0.852 SC:0.107	 GONG:0.800 SC:-0.823	 GONG:0.418 SC:-0.468	 GONG:0.930 SC:-0.350	 GONG:0.494 SC:-0.622	 GONG:0.590 SC:-0.300
cereal points:77 dim:12 classes:7	 GONG:0.446 SC:-0.519	 GONG:0.304 SC:-0.528	 GONG:0.565 SC:-0.275	 GONG:0.540 SC:-0.111	 GONG:0.476 SC:-0.094	 GONG:0.281 SC:-0.508	 GONG:0.376 SC:-0.349	 GONG:0.447 SC:-0.443	 GONG:0.302 SC:-0.322	 GONG:0.295 SC:-0.353
cmc points:1473 dim:9 classes:3	 GONG:0.451 SC:-0.080	 GONG:0.389 SC:-0.037	 GONG:0.494 SC:-0.110	 GONG:0.482 SC:-0.126	 GONG:0.450 SC:-0.049	 GONG:0.502 SC:-0.109	 GONG:0.521 SC:-0.064	 GONG:0.459 SC:-0.104	 GONG:0.445 SC:-0.102	 GONG:0.476 SC:-0.086
combined-s points:1000 dim:100 classes:3	 GONG:0.745 SC:0.256	 GONG:0.672 SC:0.337	 GONG:0.795 SC:0.294	 GONG:0.802 SC:0.462	 GONG:0.623 SC:0.488	 GONG:0.664 SC:0.291	 GONG:0.622 SC:0.244	 GONG:0.678 SC:0.277	 GONG:0.677 SC:0.285	 GONG:0.736 SC:0.255




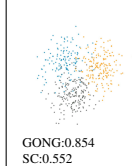
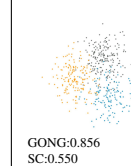
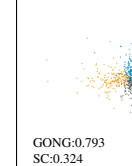
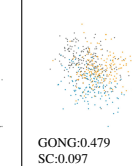
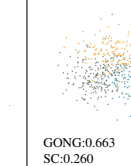
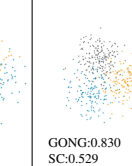
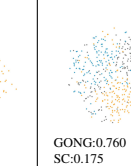

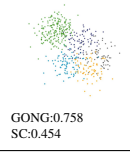
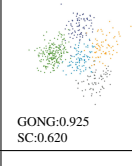
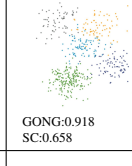
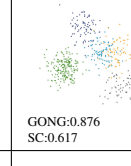
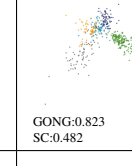
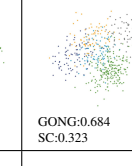

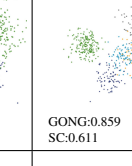
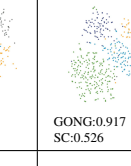
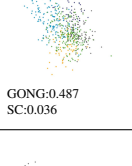

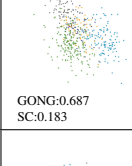
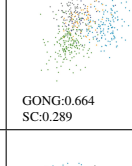
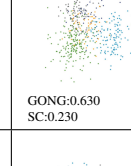
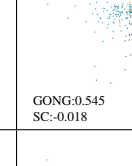
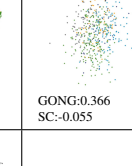
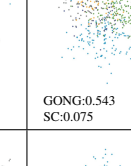
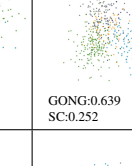
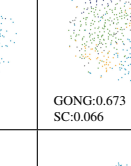
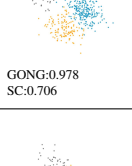
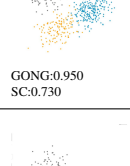
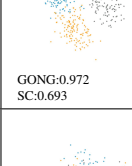
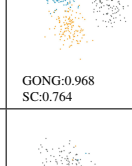
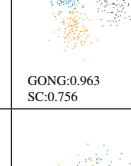
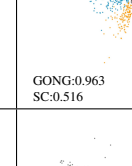
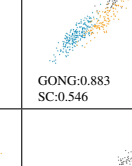
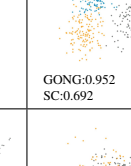
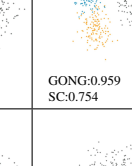
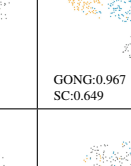

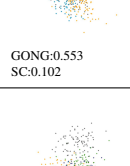

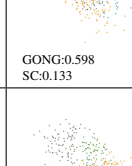
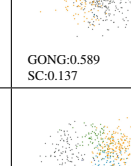
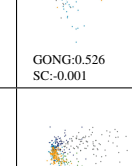
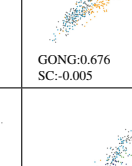
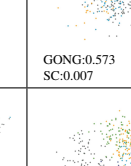
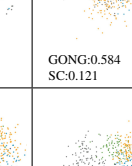
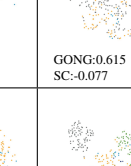

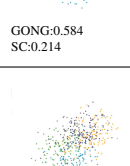
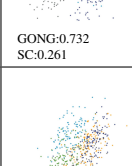
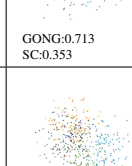
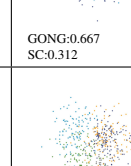
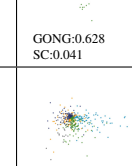
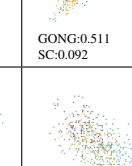
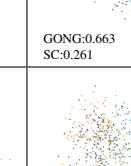
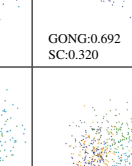
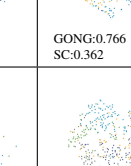
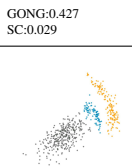
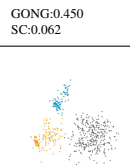

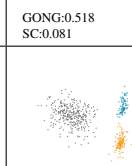
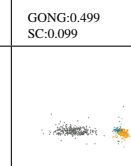
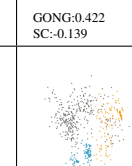
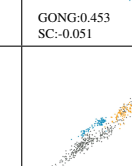
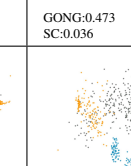
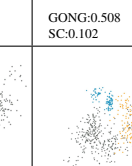

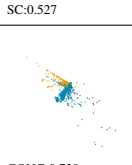
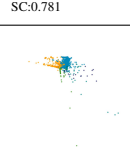

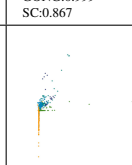
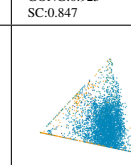
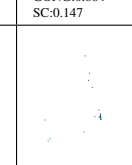
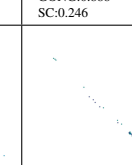

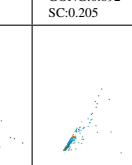
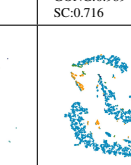



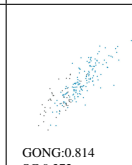

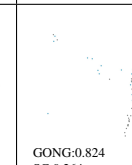

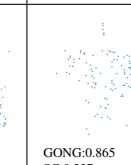












Name	PK	PD	PDK	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
Connection points:990 dim:13 classes:11	 GONG:0.839 SC:-0.176	 GONG:0.536 SC:-0.088	 GONG:0.885 SC:0.045	 GONG:0.683 SC:0.085	 GONG:0.553 SC:0.086	 GONG:0.777 SC:-0.100	 GONG:0.466 SC:-0.052	 GONG:0.714 SC:-0.112	 GONG:0.645 SC:-0.023	 GONG:0.946 SC:-0.086
dermatolog points:259 dim:34 classes:6	 GONG:0.960 SC:0.544	 GONG:0.792 SC:0.462	 GONG:0.964 SC:0.627	 GONG:0.981 SC:0.788	 GONG:0.820 SC:0.503	 GONG:0.670 SC:-0.469	 GONG:0.432 SC:-0.241	 GONG:0.831 SC:0.447	 GONG:0.805 SC:-0.198	 GONG:0.824 SC:-0.191
digits5-8 points:898 dim:64 classes:5	 GONG:0.806 SC:0.290	 GONG:0.709 SC:0.278	 GONG:0.896 SC:0.577	 GONG:0.936 SC:0.669	 GONG:0.652 SC:-0.218	 GONG:0.566 SC:0.017	 GONG:0.299 SC:-0.058	 GONG:0.635 SC:0.180	 GONG:0.607 SC:0.057	 GONG:0.992 SC:0.574
ecoliprote points:332 dim:7 classes:8	 GONG:0.593 SC:0.239	 GONG:0.560 SC:0.344	 GONG:0.793 SC:0.291	 GONG:0.782 SC:0.310	 GONG:0.719 SC:0.332	 GONG:0.706 SC:0.293	 GONG:0.695 SC:0.186	 GONG:0.729 SC:0.080	 GONG:0.710 SC:0.193	 GONG:0.775 SC:0.300
efashion points:3272 dim:4 classes:8	 GONG:0.324 SC:-0.100	 GONG:0.224 SC:-0.308	 GONG:0.372 SC:-0.098	 GONG:0.346 SC:-0.109	 GONG:0.280 SC:-0.564	 GONG:0.260 SC:-0.868	 GONG:0.248 SC:-0.582	 GONG:0.249 SC:-0.587	 GONG:0.245 SC:-0.588	 GONG:0.238 SC:-0.340
fisheries- points:121 dim:12 classes:11	 GONG:0.920 SC:0.144	 GONG:0.618 SC:0.106	 GONG:0.967 SC:0.262	 GONG:0.928 SC:0.772	 GONG:0.635 SC:0.677	 GONG:0.058 SC:-0.317	 GONG:0.093 SC:-0.339	 GONG:0.343 SC:-0.359	 GONG:0.065 SC:-0.286	 GONG:0.309 SC:-0.208
fisheries- points:121 dim:12 classes:11	 GONG:0.834 SC:-0.108	 GONG:0.665 SC:0.155	 GONG:0.859 SC:-0.087	 GONG:0.897 SC:0.550	 GONG:0.419 SC:0.630	 GONG:0.132 SC:-0.216	 GONG:0.050 SC:-0.418	 GONG:0.302 SC:-0.271	 GONG:0.143 SC:-0.219	 GONG:0.374 SC:-0.235
Forest-Typ points:325 dim:27 classes:4	 GONG:0.803 SC:0.261	 GONG:0.705 SC:0.313	 GONG:0.824 SC:0.352	 GONG:0.855 SC:0.504	 GONG:0.566 SC:0.488	 GONG:0.720 SC:0.183	 GONG:0.728 SC:0.299	 GONG:0.730 SC:0.136	 GONG:0.722 SC:0.223	 GONG:0.784 SC:0.211
hayes-roth points:132 dim:5 classes:3	 GONG:0.784 SC:0.076	 GONG:0.674 SC:-0.001	 GONG:0.803 SC:0.120	 GONG:0.677 SC:0.176	 GONG:0.715 SC:0.133	 GONG:0.379 SC:-0.109	 GONG:0.739 SC:-0.099	 GONG:0.676 SC:0.108	 GONG:0.407 SC:-0.079	 GONG:0.381 SC:-0.079
Hill-Valle points:606 dim:100 classes:2	 GONG:0.841 SC:0.004	 GONG:0.493 SC:-0.002	 GONG:0.860 SC:0.003	 GONG:0.728 SC:0.062	 GONG:0.611 SC:0.184	 GONG:0.522 SC:-0.004	 GONG:0.000 SC:-0.002	 GONG:0.573 SC:-0.001	 GONG:0.526 SC:-0.002	 GONG:0.526 SC:-0.003

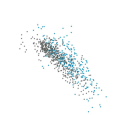
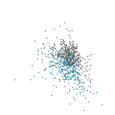

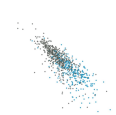




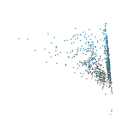























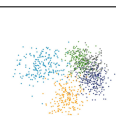


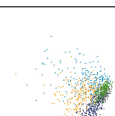






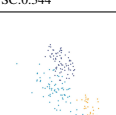

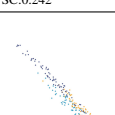
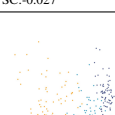
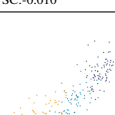


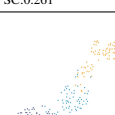
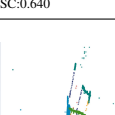


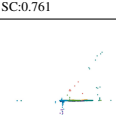
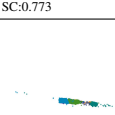
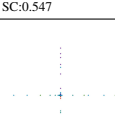
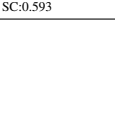
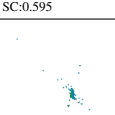
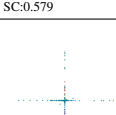
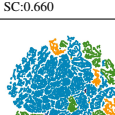
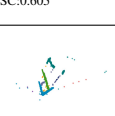
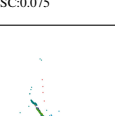

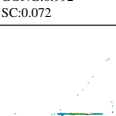
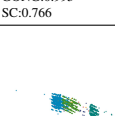
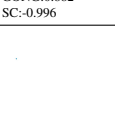
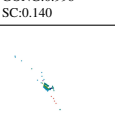
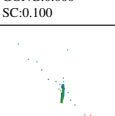

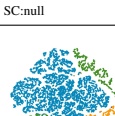
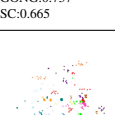

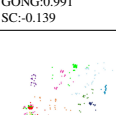
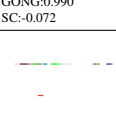
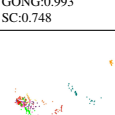
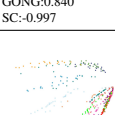
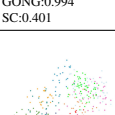
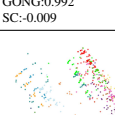
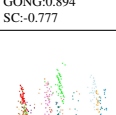
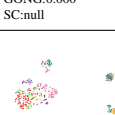
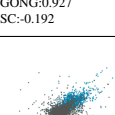
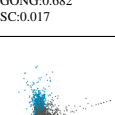
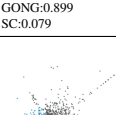
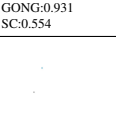
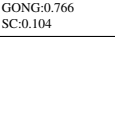
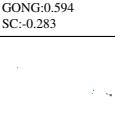
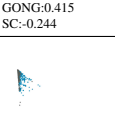
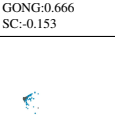
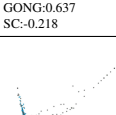

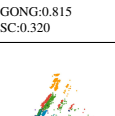
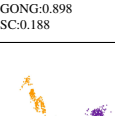
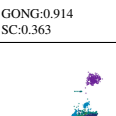
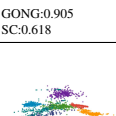
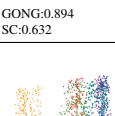
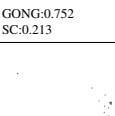
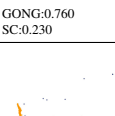

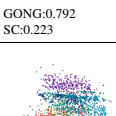
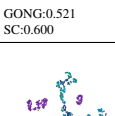
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interleave points:1490 dim:10 classes:10	 GONG:0.662 SC:0.314	 GONG:0.615 SC:0.223	 GONG:0.678 SC:0.243	 GONG:0.669 SC:0.326	 GONG:0.626 SC:0.261	 GONG:0.664 SC:0.002	 GONG:0.313 SC:-0.103	 GONG:0.501 SC:0.116	 GONG:0.615 SC:0.258	 GONG:0.960 SC:0.705
interleave points:1479 dim:10 classes:10	 GONG:0.575 SC:0.131	 GONG:0.531 SC:0.207	 GONG:0.626 SC:0.252	 GONG:0.622 SC:0.279	 GONG:0.562 SC:0.213	 GONG:0.538 SC:-0.066	 GONG:0.408 SC:-0.001	 GONG:0.482 SC:0.103	 GONG:0.579 SC:0.221	 GONG:0.973 SC:0.774
interleave points:2049 dim:15 classes:15	 GONG:0.518 SC:0.115	 GONG:0.450 SC:0.085	 GONG:0.592 SC:0.189	 GONG:0.590 SC:0.210	 GONG:0.527 SC:0.139	 GONG:0.574 SC:-0.023	 GONG:0.392 SC:-0.049	 GONG:0.429 SC:0.040	 GONG:0.542 SC:0.150	 GONG:0.997 SC:0.858
interleave points:2318 dim:15 classes:15	 GONG:0.441 SC:0.002	 GONG:0.463 SC:0.083	 GONG:0.488 SC:0.109	 GONG:0.498 SC:0.148	 GONG:0.461 SC:0.033	 GONG:0.523 SC:-0.039	 GONG:0.352 SC:-0.038	 GONG:0.348 SC:-0.066	 GONG:0.431 SC:0.031	 GONG:0.979 SC:0.792
interleave points:1254 dim:4 classes:4	 GONG:0.820 SC:0.179	 GONG:0.799 SC:0.353	 GONG:0.833 SC:0.255	 GONG:0.821 SC:0.391	 GONG:0.803 SC:0.414	 GONG:0.787 SC:-0.013	 GONG:0.667 SC:0.275	 GONG:0.800 SC:0.342	 GONG:0.810 SC:0.404	 GONG:0.950 SC:0.507
interleave points:538 dim:4 classes:4	 GONG:0.694 SC:0.227	 GONG:0.644 SC:0.320	 GONG:0.705 SC:0.298	 GONG:0.688 SC:0.337	 GONG:0.663 SC:0.329	 GONG:0.676 SC:0.100	 GONG:0.662 SC:0.036	 GONG:0.681 SC:0.293	 GONG:0.673 SC:0.324	 GONG:0.842 SC:0.394
interleave points:741 dim:5 classes:5	 GONG:0.675 SC:0.222	 GONG:0.710 SC:0.311	 GONG:0.768 SC:0.266	 GONG:0.734 SC:0.339	 GONG:0.697 SC:0.297	 GONG:0.704 SC:0.073	 GONG:0.480 SC:0.052	 GONG:0.678 SC:0.211	 GONG:0.704 SC:0.289	 GONG:0.894 SC:0.505
interleave points:696 dim:5 classes:5	 GONG:0.745 SC:0.279	 GONG:0.676 SC:0.368	 GONG:0.783 SC:0.360	 GONG:0.758 SC:0.389	 GONG:0.752 SC:0.335	 GONG:0.701 SC:0.056	 GONG:0.563 SC:0.144	 GONG:0.680 SC:0.244	 GONG:0.723 SC:0.378	 GONG:0.900 SC:0.554
interleave points:837 dim:6 classes:6	 GONG:0.705 SC:0.291	 GONG:0.655 SC:0.290	 GONG:0.716 SC:0.295	 GONG:0.700 SC:0.318	 GONG:0.663 SC:0.316	 GONG:0.651 SC:0.081	 GONG:0.615 SC:0.043	 GONG:0.580 SC:0.122	 GONG:0.658 SC:0.300	 GONG:0.901 SC:0.480











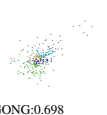
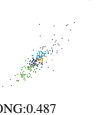
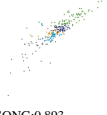


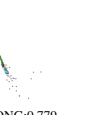




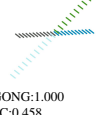
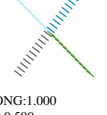
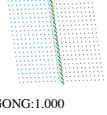

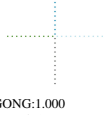
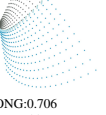
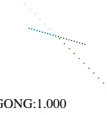

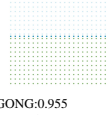
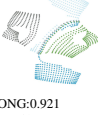
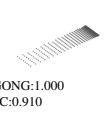





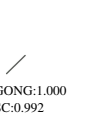
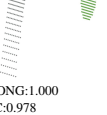



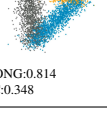
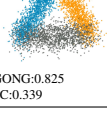
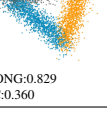
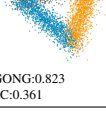
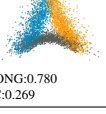
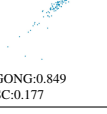
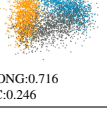
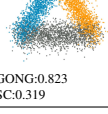
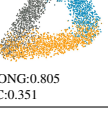
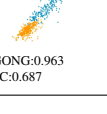
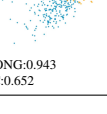
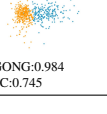
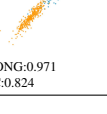
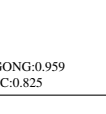

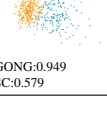



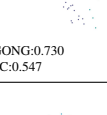

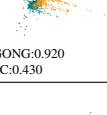
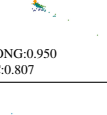

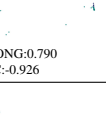
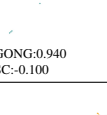

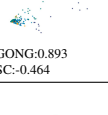
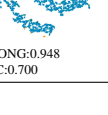
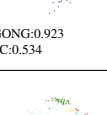
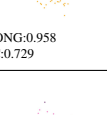
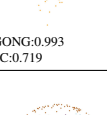
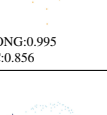
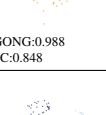
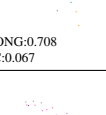
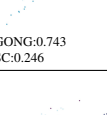
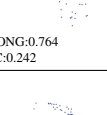


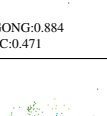
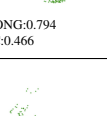
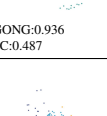
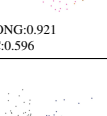
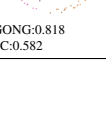
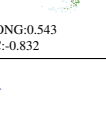
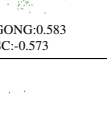

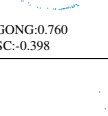

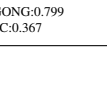
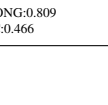
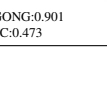
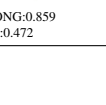
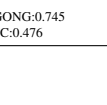
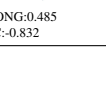
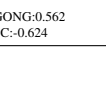
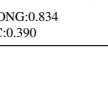
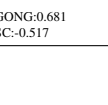
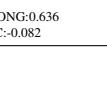
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interleave points:1034 dim:6 classes:6	 GONG:0.699 SC:0.232	 GONG:0.666 SC:0.294	 GONG:0.703 SC:0.267	 GONG:0.701 SC:0.317	 GONG:0.665 SC:0.296	 GONG:0.729 SC:0.178	 GONG:0.407 SC:-0.042	 GONG:0.602 SC:0.231	 GONG:0.660 SC:0.297	 GONG:0.839 SC:0.455
interleave points:857 dim:3 classes:3	 GONG:0.869 SC:0.508	 GONG:0.875 SC:0.568	 GONG:0.892 SC:0.363	 GONG:0.895 SC:0.576	 GONG:0.895 SC:0.572	 GONG:0.902 SC:0.334	 GONG:0.631 SC:0.353	 GONG:0.885 SC:0.490	 GONG:0.885 SC:0.562	 GONG:0.914 SC:0.506
interleave points:1098 dim:3 classes:3	 GONG:0.889 SC:0.340	 GONG:0.877 SC:0.488	 GONG:0.897 SC:0.405	 GONG:0.883 SC:0.519	 GONG:0.884 SC:0.517	 GONG:0.922 SC:0.253	 GONG:0.577 SC:0.263	 GONG:0.891 SC:0.493	 GONG:0.861 SC:0.501	 GONG:0.965 SC:0.432
ionosphere points:351 dim:34 classes:2	 GONG:0.954 SC:0.433	 GONG:0.837 SC:0.490	 GONG:0.953 SC:0.503	 GONG:0.919 SC:0.627	 GONG:0.885 SC:0.520	 GONG:0.753 SC:0.053	 GONG:0.843 SC:0.270	 GONG:0.829 SC:0.172	 GONG:0.771 SC:0.067	 GONG:0.812 SC:0.170
iris points:147 dim:4 classes:3	 GONG:0.969 SC:0.784	 GONG:0.955 SC:0.723	 GONG:0.988 SC:0.819	 GONG:0.963 SC:0.872	 GONG:0.938 SC:0.810	 GONG:0.950 SC:0.558	 GONG:0.947 SC:0.750	 GONG:0.967 SC:0.751	 GONG:0.963 SC:0.675	 GONG:0.802 SC:0.440
italianwin points:102 dim:6 classes:13	 GONG:0.762 SC:0.186	 GONG:0.413 SC:-0.072	 GONG:0.845 SC:0.341	 GONG:0.838 SC:0.517	 GONG:0.442 SC:0.283	 GONG:0.141 SC:-0.696	 GONG:0.546 SC:-0.021	 GONG:0.617 SC:0.176	 GONG:0.117 SC:-0.614	 GONG:0.186 SC:-0.342
Javier-Gen points:600 dim:3 classes:3	 GONG:0.922 SC:0.224	 GONG:0.875 SC:0.369	 GONG:0.926 SC:0.283	 GONG:0.837 SC:0.377	 GONG:0.821 SC:0.377	 GONG:0.876 SC:0.289	 GONG:0.911 SC:0.320	 GONG:0.921 SC:0.119	 GONG:0.846 SC:0.376	 GONG:0.997 SC:0.802
Javier-Gen points:400 dim:3 classes:4	 GONG:0.858 SC:0.214	 GONG:0.847 SC:0.242	 GONG:0.875 SC:0.148	 GONG:0.867 SC:0.174	 GONG:0.872 SC:0.188	 GONG:0.840 SC:0.158	 GONG:0.831 SC:0.091	 GONG:0.875 SC:0.171	 GONG:0.877 SC:0.171	 GONG:1.000 SC:0.850
Javier-Gen points:500 dim:3 classes:5	 GONG:0.849 SC:-0.021	 GONG:0.816 SC:0.238	 GONG:0.855 SC:0.183	 GONG:0.850 SC:0.230	 GONG:0.797 SC:0.234	 GONG:0.801 SC:0.181	 GONG:0.777 SC:0.098	 GONG:0.853 SC:0.182	 GONG:0.800 SC:0.241	 GONG:1.000 SC:0.790
lenses points:24 dim:5 classes:3	 GONG:0.806 SC:0.090	 GONG:0.858 SC:0.350	 GONG:0.750 SC:0.173	 GONG:0.875 SC:0.457	 GONG:0.667 SC:0.358	 GONG:0.229 SC:-0.293	 GONG:0.271 SC:-0.026	 GONG:0.833 SC:0.154	 GONG:0.229 SC:-0.188	 GONG:0.586 SC:0.037


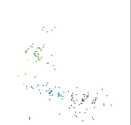








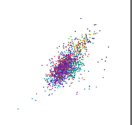

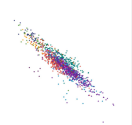



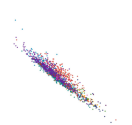








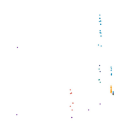



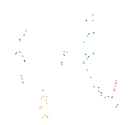
Name	PK	PD	PDK	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
movement-1 points:360 dim:90 classes:15	 GONG:0.622 SC:-0.223	 GONG:0.499 SC:-0.193	 GONG:0.603 SC:-0.066	 GONG:0.672 SC:0.008	 GONG:0.527 SC:0.074	 GONG:0.358 SC:-0.323	 GONG:0.406 SC:-0.288	 GONG:0.510 SC:-0.198	 GONG:0.344 SC:-0.314	 GONG:0.800 SC:-0.215
ms-interle points:496 dim:3 classes:3	 GONG:0.879 SC:0.468	 GONG:0.870 SC:0.544	 GONG:0.885 SC:0.382	 GONG:0.885 SC:0.555	 GONG:0.867 SC:0.553	 GONG:0.885 SC:0.293	 GONG:0.575 SC:0.238	 GONG:0.880 SC:0.539	 GONG:0.866 SC:0.546	 GONG:0.886 SC:0.236
ms-interle points:571 dim:3 classes:3	 GONG:0.669 SC:0.215	 GONG:0.631 SC:0.233	 GONG:0.681 SC:0.139	 GONG:0.649 SC:0.238	 GONG:0.655 SC:0.238	 GONG:0.638 SC:0.100	 GONG:0.423 SC:-0.012	 GONG:0.633 SC:0.214	 GONG:0.649 SC:0.225	 GONG:0.642 SC:0.137
ms-interle points:185 dim:3 classes:3	 GONG:0.915 SC:0.425	 GONG:0.904 SC:0.485	 GONG:0.916 SC:0.402	 GONG:0.887 SC:0.511	 GONG:0.861 SC:0.508	 GONG:0.934 SC:0.253	 GONG:0.795 SC:0.225	 GONG:0.904 SC:0.463	 GONG:0.880 SC:0.500	 GONG:0.936 SC:0.158
ms-interle points:205 dim:3 classes:3	 GONG:0.515 SC:-0.002	 GONG:0.490 SC:-0.014	 GONG:0.627 SC:-0.013	 GONG:0.511 SC:0.041	 GONG:0.474 SC:0.043	 GONG:0.521 SC:0.058	 GONG:0.495 SC:-0.030	 GONG:0.549 SC:-0.021	 GONG:0.488 SC:0.040	 GONG:0.546 SC:-0.030
ms-interle points:1821 dim:3 classes:3	 GONG:0.892 SC:0.449	 GONG:0.881 SC:0.520	 GONG:0.898 SC:0.450	 GONG:0.890 SC:0.524	 GONG:0.890 SC:0.524	 GONG:0.946 SC:0.364	 GONG:0.693 SC:0.232	 GONG:0.889 SC:0.498	 GONG:0.884 SC:0.520	 GONG:0.967 SC:0.274
ms-interle points:1892 dim:3 classes:3	 GONG:0.506 SC:0.055	 GONG:0.495 SC:0.064	 GONG:0.538 SC:-0.007	 GONG:0.509 SC:0.069	 GONG:0.510 SC:0.064	 GONG:0.509 SC:0.044	 GONG:0.527 SC:-0.063	 GONG:0.519 SC:-0.010	 GONG:0.511 SC:0.055	 GONG:0.564 SC:-0.026
ms-interle points:309 dim:3 classes:3	 GONG:0.989 SC:0.727	 GONG:0.984 SC:0.766	 GONG:0.987 SC:0.741	 GONG:0.989 SC:0.784	 GONG:0.991 SC:0.784	 GONG:0.987 SC:0.551	 GONG:0.911 SC:0.478	 GONG:0.988 SC:0.727	 GONG:0.990 SC:0.783	 GONG:1.000 SC:0.927
ms-interle points:292 dim:3 classes:3	 GONG:0.911 SC:0.406	 GONG:0.888 SC:0.502	 GONG:0.924 SC:0.528	 GONG:0.916 SC:0.533	 GONG:0.916 SC:0.533	 GONG:0.894 SC:0.274	 GONG:0.657 SC:0.252	 GONG:0.911 SC:0.496	 GONG:0.919 SC:0.530	 GONG:0.887 SC:0.434
ms-interle points:325 dim:3 classes:3	 GONG:0.589 SC:0.050	 GONG:0.561 SC:0.149	 GONG:0.654 SC:0.119	 GONG:0.646 SC:0.209	 GONG:0.616 SC:0.208	 GONG:0.592 SC:0.071	 GONG:0.423 SC:-0.009	 GONG:0.621 SC:0.171	 GONG:0.589 SC:0.205	 GONG:0.604 SC:0.089

Name	PK	PD	PKD	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
music-net- points:171 dim:9 classes:6	 GONG:0.576 SC:0.671	 GONG:0.464 SC:0.819	 GONG:0.983 SC:0.531	 GONG:0.980 SC:0.933	 GONG:0.947 SC:0.922	 GONG:0.975 SC:0.959	 GONG:0.946 SC:0.844	 GONG:0.980 SC:0.908	 GONG:0.958 SC:0.923	 GONG:0.899 SC:0.450
n100-d10-c points:100 dim:10 classes:3	 GONG:0.941 SC:0.710	 GONG:0.969 SC:0.771	 GONG:1.000 SC:0.896	 GONG:1.000 SC:0.896	 GONG:0.990 SC:0.888	 GONG:0.973 SC:0.787	 GONG:0.759 SC:0.369	 GONG:0.968 SC:0.664	 GONG:0.987 SC:0.874	 GONG:0.828 SC:0.388
n100-d10-c points:100 dim:10 classes:3	 GONG:0.622 SC:0.171	 GONG:0.498 SC:0.170	 GONG:0.868 SC:0.368	 GONG:0.805 SC:0.450	 GONG:0.729 SC:0.456	 GONG:0.625 SC:0.147	 GONG:0.282 SC:0.058	 GONG:0.618 SC:0.165	 GONG:0.742 SC:0.382	 GONG:0.480 SC:0.051
n100-d10-c points:100 dim:10 classes:5	 GONG:0.726 SC:0.193	 GONG:0.751 SC:0.469	 GONG:0.899 SC:0.486	 GONG:0.922 SC:0.595	 GONG:0.821 SC:0.545	 GONG:0.695 SC:0.266	 GONG:0.529 SC:0.029	 GONG:0.706 SC:0.295	 GONG:0.825 SC:0.507	 GONG:0.751 SC:0.297
n100-d10-c points:100 dim:10 classes:5	 GONG:0.472 SC:0.018	 GONG:0.282 SC:0.121	 GONG:0.727 SC:0.092	 GONG:0.641 SC:0.267	 GONG:0.616 SC:0.259	 GONG:0.441 SC:0.209	 GONG:0.356 SC:0.043	 GONG:0.458 SC:0.024	 GONG:0.425 SC:0.075	 GONG:0.383 SC:0.174
n100-d5-c3 points:100 dim:5 classes:3	 GONG:0.975 SC:0.726	 GONG:0.968 SC:0.789	 GONG:0.987 SC:0.830	 GONG:0.987 SC:0.861	 GONG:0.983 SC:0.859	 GONG:0.971 SC:0.596	 GONG:0.887 SC:0.388	 GONG:0.977 SC:0.762	 GONG:0.983 SC:0.855	 GONG:0.911 SC:0.398
n100-d5-c3 points:100 dim:5 classes:3	 GONG:0.675 SC:0.135	 GONG:0.718 SC:0.320	 GONG:0.815 SC:0.310	 GONG:0.778 SC:0.401	 GONG:0.728 SC:0.399	 GONG:0.494 SC:0.307	 GONG:0.484 SC:0.081	 GONG:0.659 SC:0.181	 GONG:0.707 SC:0.308	 GONG:0.678 SC:0.100
n100-d5-c5 points:100 dim:5 classes:5	 GONG:0.526 SC:0.022	 GONG:0.586 SC:0.241	 GONG:0.736 SC:0.259	 GONG:0.653 SC:0.313	 GONG:0.703 SC:0.314	 GONG:0.513 SC:0.090	 GONG:0.578 SC:0.081	 GONG:0.653 SC:0.300	 GONG:0.702 SC:0.270	 GONG:0.502 SC:0.017
n100-d5-c5 points:100 dim:5 classes:5	 GONG:0.525 SC:0.006	 GONG:0.338 SC:0.067	 GONG:0.688 SC:0.014	 GONG:0.546 SC:0.118	 GONG:0.581 SC:0.020	 GONG:0.473 SC:0.329	 GONG:0.331 SC:0.195	 GONG:0.544 SC:0.049	 GONG:0.591 SC:0.049	 GONG:0.550 SC:0.099
n500-d10-c points:500 dim:10 classes:3	 GONG:0.995 SC:0.848	 GONG:0.999 SC:0.878	 GONG:1.000 SC:0.902	 GONG:1.000 SC:0.932	 GONG:0.999 SC:0.931	 GONG:0.999 SC:0.878	 GONG:0.995 SC:0.820	 GONG:0.995 SC:0.862	 GONG:1.000 SC:0.930	 GONG:0.997 SC:0.738

Name	PK	PD	PDK	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
n500-d10-c points:500 dim:10 classes:3	 GONG:0.809 SC:0.446	 GONG:0.814 SC:0.455	 GONG:0.868 SC:0.531	 GONG:0.854 SC:0.552	 GONG:0.856 SC:0.550	 GONG:0.793 SC:0.324	 GONG:0.479 SC:0.097	 GONG:0.663 SC:0.260	 GONG:0.830 SC:0.529	 GONG:0.760 SC:0.175
n500-d10-c points:500 dim:10 classes:5	 GONG:0.864 SC:0.493	 GONG:0.758 SC:0.454	 GONG:0.925 SC:0.620	 GONG:0.918 SC:0.658	 GONG:0.876 SC:0.617	 GONG:0.823 SC:0.482	 GONG:0.684 SC:0.323	 GONG:0.801 SC:0.427	 GONG:0.859 SC:0.611	 GONG:0.917 SC:0.526
n500-d10-c points:500 dim:10 classes:5	 GONG:0.487 SC:0.036	 GONG:0.526 SC:0.169	 GONG:0.687 SC:0.183	 GONG:0.664 SC:0.289	 GONG:0.630 SC:0.230	 GONG:0.545 SC:-0.018	 GONG:0.366 SC:-0.055	 GONG:0.543 SC:0.075	 GONG:0.639 SC:0.252	 GONG:0.673 SC:0.066
n500-d5-c3 points:500 dim:5 classes:3	 GONG:0.978 SC:0.706	 GONG:0.950 SC:0.730	 GONG:0.972 SC:0.693	 GONG:0.968 SC:0.764	 GONG:0.963 SC:0.756	 GONG:0.963 SC:0.516	 GONG:0.883 SC:0.546	 GONG:0.952 SC:0.692	 GONG:0.959 SC:0.754	 GONG:0.967 SC:0.649
n500-d5-c3 points:500 dim:5 classes:3	 GONG:0.511 SC:0.037	 GONG:0.553 SC:0.102	 GONG:0.653 SC:0.085	 GONG:0.598 SC:0.133	 GONG:0.589 SC:0.137	 GONG:0.526 SC:-0.001	 GONG:0.676 SC:-0.005	 GONG:0.573 SC:0.007	 GONG:0.584 SC:0.121	 GONG:0.615 SC:-0.077
n500-d5-c5 points:500 dim:5 classes:5	 GONG:0.696 SC:0.265	 GONG:0.584 SC:0.214	 GONG:0.732 SC:0.261	 GONG:0.713 SC:0.353	 GONG:0.667 SC:0.312	 GONG:0.628 SC:0.041	 GONG:0.511 SC:0.092	 GONG:0.663 SC:0.261	 GONG:0.692 SC:0.320	 GONG:0.766 SC:0.362
n500-d5-c5 points:500 dim:5 classes:5	 GONG:0.427 SC:0.029	 GONG:0.450 SC:0.062	 GONG:0.550 SC:0.051	 GONG:0.518 SC:0.081	 GONG:0.499 SC:0.099	 GONG:0.422 SC:-0.139	 GONG:0.453 SC:-0.051	 GONG:0.473 SC:0.036	 GONG:0.508 SC:0.102	 GONG:0.530 SC:-0.038
olive points:572 dim:8 classes:3	 GONG:0.995 SC:0.527	 GONG:0.991 SC:0.781	 GONG:0.999 SC:0.804	 GONG:0.999 SC:0.867	 GONG:0.925 SC:0.847	 GONG:0.884 SC:0.147	 GONG:0.888 SC:0.246	 GONG:0.908 SC:0.032	 GONG:0.892 SC:0.205	 GONG:0.989 SC:0.716
page-block points:5473 dim:10 classes:5	 GONG:0.738 SC:0.120	 GONG:0.706 SC:0.760	 GONG:0.937 SC:0.809	 GONG:0.942 SC:0.822	 GONG:0.909 SC:0.699	 GONG:0.895 SC:-0.926	 GONG:0.941 SC:-0.133	 GONG:0.935 SC:-0.600	 GONG:0.918 SC:-0.464	 GONG:0.940 SC:-0.177
parkin-son points:195 dim:11 classes:2	 GONG:0.913 SC:0.138	 GONG:0.797 SC:0.351	 GONG:0.923 SC:0.211	 GONG:0.814 SC:0.372	 GONG:0.841 SC:0.489	 GONG:0.824 SC:0.264	 GONG:0.787 SC:0.360	 GONG:0.865 SC:0.337	 GONG:0.816 SC:0.259	 GONG:0.832 SC:0.250

Name	PK	PD	PDK	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
pima-india points:768 dim:8 classes:2	 GONG:0.695 SC:0.203	 GONG:0.648 SC:0.204	 GONG:0.733 SC:0.221	 GONG:0.703 SC:0.359	 GONG:0.566 SC:0.354	 GONG:0.666 SC:0.212	 GONG:0.630 SC:0.173	 GONG:0.691 SC:0.253	 GONG:0.661 SC:0.169	 GONG:0.684 SC:0.077
processed- points:303 dim:13 classes:5	 GONG:0.423 SC:0.025	 GONG:0.386 SC:0.085	 GONG:0.534 SC:0.019	 GONG:0.560 SC:0.161	 GONG:0.522 SC:0.122	 GONG:0.356 SC:0.315	 GONG:0.407 SC:0.100	 GONG:0.469 SC:0.162	 GONG:0.390 SC:0.132	 GONG:0.401 SC:0.052
satimage points:4435 dim:36 classes:6	 GONG:0.781 SC:0.284	 GONG:0.745 SC:0.429	 GONG:0.792 SC:0.150	 GONG:0.813 SC:0.456	 GONG:0.753 SC:0.334	 GONG:0.790 SC:0.061	 GONG:0.717 SC:0.118	 GONG:0.775 SC:0.265	 GONG:0.786 SC:0.190	 GONG:0.895 SC:0.376
scene points:996 dim:295 classes:5	 GONG:0.688 SC:0.155	 GONG:0.555 SC:0.052	 GONG:0.675 SC:0.344	 GONG:0.781 SC:0.369	 GONG:0.718 SC:0.242	 GONG:0.578 SC:0.027	 GONG:0.423 SC:0.010	 GONG:0.520 SC:0.051	 GONG:0.565 SC:0.090	 GONG:0.748 SC:0.261
seeds points:210 dim:7 classes:3	 GONG:0.960 SC:0.640	 GONG:0.914 SC:0.645	 GONG:0.946 SC:0.607	 GONG:0.956 SC:0.761	 GONG:0.648 SC:0.773	 GONG:0.889 SC:0.547	 GONG:0.874 SC:0.593	 GONG:0.906 SC:0.595	 GONG:0.885 SC:0.579	 GONG:0.881 SC:0.660
shuttle-bi points:43500 dim:9 classes:7	 GONG:0.637 SC:0.605	 GONG:0.603 SC:0.075	 GONG:0.991 SC:0.601	 GONG:0.992 SC:0.072	 GONG:0.995 SC:0.766	 GONG:0.882 SC:0.996	 GONG:0.996 SC:0.140	 GONG:0.000 SC:0.100	 GONG:0.905 SC:0.916	 GONG:0.000 SC:null
shuttle-sm points:14500 dim:9 classes:7	 GONG:0.737 SC:0.665	 GONG:0.683 SC:0.075	 GONG:0.991 SC:0.139	 GONG:0.990 SC:0.072	 GONG:0.993 SC:0.748	 GONG:0.840 SC:0.997	 GONG:0.994 SC:0.401	 GONG:0.992 SC:0.009	 GONG:0.894 SC:0.777	 GONG:0.000 SC:null
soybean points:562 dim:36 classes:15	 GONG:0.927 SC:0.192	 GONG:0.682 SC:0.017	 GONG:0.899 SC:0.079	 GONG:0.931 SC:0.554	 GONG:0.766 SC:0.104	 GONG:0.594 SC:0.283	 GONG:0.415 SC:0.244	 GONG:0.666 SC:0.153	 GONG:0.637 SC:0.218	 GONG:0.853 SC:0.046
spambase points:4601 dim:57 classes:2	 GONG:0.815 SC:0.320	 GONG:0.898 SC:0.188	 GONG:0.914 SC:0.363	 GONG:0.905 SC:0.618	 GONG:0.894 SC:0.632	 GONG:0.752 SC:0.213	 GONG:0.760 SC:0.230	 GONG:0.812 SC:0.248	 GONG:0.792 SC:0.223	 GONG:0.521 SC:0.600
Statlog-lm points:2310 dim:19 classes:7	 GONG:0.894 SC:0.204	 GONG:0.904 SC:0.436	 GONG:0.928 SC:0.273	 GONG:0.905 SC:0.453	 GONG:0.680 SC:0.372	 GONG:0.588 SC:0.497	 GONG:0.832 SC:0.120	 GONG:0.879 SC:0.230	 GONG:0.674 SC:0.015	 GONG:0.947 SC:0.092

Name	PK	PD	PDK	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
test—int points:2179 dim:3 classes:3	 GONG:0.895 SC:0.438	 GONG:0.895 SC:0.521	 GONG:0.901 SC:0.485	 GONG:0.895 SC:0.529	 GONG:0.897 SC:0.528	 GONG:0.947 SC:0.355	 GONG:0.568 SC:0.140	 GONG:0.891 SC:0.390	 GONG:0.890 SC:0.523	 GONG:0.593 SC:0.500
tse300 points:244 dim:49 classes:8	 GONG:0.698 SC:0.039	 GONG:0.487 SC:0.057	 GONG:0.893 SC:0.053	 GONG:0.810 SC:0.051	 GONG:0.684 SC:0.060	 GONG:0.779 SC:0.212	 GONG:0.485 SC:0.342	 GONG:0.843 SC:0.022	 GONG:0.791 SC:0.026	 GONG:0.324 SC:0.594
twosquare- points:968 dim:3 classes:4	 GONG:1.000 SC:0.458	 GONG:1.000 SC:0.590	 GONG:1.000 SC:0.489	 GONG:1.000 SC:0.489	 GONG:1.000 SC:0.694	 GONG:0.706 SC:0.066	 GONG:1.000 SC:0.215	 GONG:1.000 SC:0.694	 GONG:0.955 SC:0.057	 GONG:0.921 SC:0.541
UnEvenDens points:905 dim:3 classes:2	 GONG:1.000 SC:0.910	 GONG:1.000 SC:0.971	 GONG:1.000 SC:0.767	 GONG:1.000 SC:0.934	 GONG:1.000 SC:0.992	 GONG:1.000 SC:0.974	 GONG:1.000 SC:0.992	 GONG:1.000 SC:0.978	 GONG:1.000 SC:0.978	 GONG:1.000 SC:0.571
waveform points:5000 dim:21 classes:3	 GONG:0.793 SC:0.315	 GONG:0.814 SC:0.348	 GONG:0.825 SC:0.339	 GONG:0.829 SC:0.360	 GONG:0.823 SC:0.361	 GONG:0.780 SC:0.269	 GONG:0.849 SC:0.177	 GONG:0.716 SC:0.246	 GONG:0.823 SC:0.319	 GONG:0.805 SC:0.351
wdbc-class points:569 dim:30 classes:2	 GONG:0.963 SC:0.687	 GONG:0.943 SC:0.652	 GONG:0.984 SC:0.745	 GONG:0.971 SC:0.824	 GONG:0.959 SC:0.825	 GONG:0.905 SC:0.369	 GONG:0.949 SC:0.579	 GONG:0.910 SC:0.611	 GONG:0.906 SC:0.607	 GONG:0.832 SC:0.205
white-ball points:5473 dim:10 classes:5	 GONG:0.730 SC:0.547	 GONG:0.710 SC:0.762	 GONG:0.920 SC:0.430	 GONG:0.950 SC:0.807	 GONG:0.915 SC:0.699	 GONG:0.790 SC:0.926	 GONG:0.940 SC:0.100	 GONG:0.935 SC:0.288	 GONG:0.893 SC:0.464	 GONG:0.948 SC:0.700
wine points:178 dim:13 classes:3	 GONG:0.923 SC:0.534	 GONG:0.958 SC:0.729	 GONG:0.993 SC:0.719	 GONG:0.995 SC:0.856	 GONG:0.988 SC:0.848	 GONG:0.708 SC:0.067	 GONG:0.743 SC:0.246	 GONG:0.764 SC:0.242	 GONG:0.713 SC:0.250	 GONG:0.883 SC:0.228
worldmap points:151 dim:12 classes:5	 GONG:0.884 SC:0.471	 GONG:0.794 SC:0.466	 GONG:0.936 SC:0.487	 GONG:0.921 SC:0.596	 GONG:0.818 SC:0.582	 GONG:0.543 SC:0.832	 GONG:0.583 SC:0.573	 GONG:0.807 SC:0.134	 GONG:0.760 SC:0.398	 GONG:0.728 SC:0.011
world-11d points:151 dim:10 classes:5	 GONG:0.799 SC:0.367	 GONG:0.809 SC:0.466	 GONG:0.901 SC:0.473	 GONG:0.859 SC:0.472	 GONG:0.745 SC:0.476	 GONG:0.485 SC:0.832	 GONG:0.562 SC:0.624	 GONG:0.834 SC:0.390	 GONG:0.681 SC:0.517	 GONG:0.636 SC:0.082

Name	PK	PD	PDK	PDD	LDA	GDA	NCA	RANDOM	PCA	t-SNE
world-9d points:192 dim:3 classes:13	 GONG:0.691 SC:0.233	 GONG:0.617 SC:0.238	 GONG:0.914 SC:0.292	 GONG:0.885 SC:0.353	 GONG:0.731 SC:0.199	 GONG:0.777 SC:0.126	 GONG:0.759 SC:0.011	 GONG:0.886 SC:0.326	 GONG:0.784 SC:0.162	 GONG:0.906 SC:0.387
yeast points:1452 dim:7 classes:10	 GONG:0.353 SC:-0.100	 GONG:0.374 SC:-0.333	 GONG:0.441 SC:-0.133	 GONG:0.441 SC:-0.483	 GONG:0.417 SC:-0.071	 GONG:0.338 SC:-0.164	 GONG:0.366 SC:-0.186	 GONG:0.390 SC:-0.190	 GONG:0.348 SC:-0.178	 GONG:0.408 SC:0.200
zoo points:101 dim:16 classes:7	 GONG:0.921 SC:0.431	 GONG:0.651 SC:0.333	 GONG:0.960 SC:0.517	 GONG:1.000 SC:0.965	 GONG:0.883 SC:0.320	 GONG:0.944 SC:0.321	 GONG:0.909 SC:0.249	 GONG:0.935 SC:0.275	 GONG:0.925 SC:0.385	 GONG:0.962 SC:0.209