Supplemental Material

Empirical Guidance on Scatterplot and Dimension Reduction Technique Choices

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Content

Pointers from the paper

Section 4.4 / 4.5

Figure 5 / Section 5.3.1

Section 5.5

A. List of Datasets

List sorting = heatmap sorting

id	Dataset name	Category	Points	Dimensions	Classes	Provenance
1	abalone	real	4154	7	28	uci
2	cars-2	real	7404	22	53	colleagues
3	industryIndices	real	102	6	13	uci
4	worldMap	real	192	3	13	visumap
5	cars-3	real	7404	22	12	colleagues
6	fisheriesEscapementTarget	real	121	12	11	colleagues
7	fisheriesHarvestRule	real	121	12	11	colleagues
8	yeast	real	1452	8	10	uci
9	ecoliProteins	real	332	7	8	visumap
10	eFashion	real	3272	4	8	sap
11	tse300	real	244	49	8	visumap
12	cereal	real	77	12	7	xmdv
13	shuttle-big	real	43500	9	7	uci
14	shuttle-small	real	14500	9	7	uci
15	musicNetGroups	real	171	9	6	visumap
16	hiv	real	78	159	6	colleagues
17	bbdm13	real	200	13	5	umass
18	pageBlocks	real	5473	10	5	uci
19	world-12d	real	151	12	5	visumap
20	world-10d	real	151	10	5	visumap
21	bostonHousing	real	155	13	3	uci
22	iris	real	147	4	3	uci
23	olive	real	572	8	3	colleagues
24	swanson	real	1875	6	3	xmdv
25	wine	real	178	13	3	uci
26	breastCancer-original	real	454	9	2	uci
27	cars-1	real	7404	22	2	colleagues
28	ionosphere	real	351	34	2	visumap
29	parkinson	real	195	11	2	uci
30	spamBase	real	4601	57	2	uci
31	breastCancer-diagnostic	real	569	30	2	uci
32	gauss-n100-10d-5smallCl	gaussian	100	10	5	
33	gauss-n100-10d-5largeCl	gaussian	100	10	5	
34	gauss-n100-5d-5smallCl	gaussian	100	5	5	
35	gauss-n100-5d-5largeCl	gaussian	100	5	5	
36	gauss-n500-10d-5smallCl	gaussian	500	10	5	
37	gauss-n500-10d-5largeCl	gaussian	500	10	5	
38	gauss-n500-5d-5smallCl	gaussian	500	5	5	
39	gauss-n500-5d-5largeCl	gaussian	500	5	5	
40	gauss-n100-10d-3smallCl	gaussian	100	10	3	
41	gauss-n100-10d-3largeCl	gaussian	100	10	3	
42	gauss-n100-5d-3smallCl	gaussian	100	5	3	
43	gauss-n100-5d-3largeCl	gaussian	100	5	3	
44	gauss-n500-10d-3smallCl	gaussian	500	10	3	
45	gauss-n500-10d-3largeCl	gaussian	500	10	3	
46	gauss-n500-5d-3smallCl	gaussian	500	5	3	
47	gauss-n500-5d-3largeCl	gaussian	500	5	3	

id	Dataset name	Category	Points	Dimensions	Classes
48	entangled2-15d-adjacent	interleaved	2049	15	15
49	entangled2-15d-overlap	interleaved	2318	15	15
50	entangled2-10d-adjacent	interleaved	1490	10	10
51	entangled2-10d-overlap	interleaved	1479	10	10
52	entangled2-6d-adjacent	interleaved	837	6	6
53	entangled2-6d-overlap	interleaved	1034	6	6
54	entangled2-5d-adjacent	interleaved	741	5	5
55	entangled2-5d-overlap	interleaved	696	5	5
56	entangled1-3d-5cl-separat	interleaved	500	3	5
57	entangled2-4d-adjacent	interleaved	1254	4	4
58	entangled2-4d-overlap	interleaved	538	4	4
59	entangled1-3d-4cl-separat	interleaved	400	3	4
60	entangled2-3d-overlap	interleaved	857	3	3
61	entangled2-3d-adjacent	interleaved	1098	3	3
62	entangled1-3d-3cl-separat	interleaved	600	3	3
63	entangled3-l-3d-smallOver	interleaved	496	3	3
64	entangled3-l-3d-bigOverla	interleaved	571	3	3
65	entangled3-s-3d-adjacent	interleaved	185	3	3
66	entangled3-s-3d-bigOverla	interleaved	205	3	3
67	entangled3-xl-3d-adjacent	interleaved	1821	3	3
68	entangled3-xl-3d-bigOverl	interleaved	1892	3	3
69	entangled3-m-3d-adjacent	interleaved	309	3	3
70	entangled3-m-3d-smallOve	interleaved	292	3	3
71	entangled3-m-3d-bigOverl	interleaved	325	3	3
72	grid-4d	grid	1296	4	16
73	grid-3d	grid	1000	3	8
74	twoSquare	grid	968	3	4
75	unevenDensity	grid	905	3	2

A video of all resulting 816 scatterplot samples can be found at:

http://www.cs.ubc.ca/labs/imager/video/2012/VisClusterSep/VisClusterSep_video1.avi

(60.8 MB, no audio, tested on VLC 1.1.12)

B. Heatmaps

B1. Labeled heatmaps

as extensions to Figure 2, 3, and 6 in the paper

	1
	1.5
	2
	2.5
	3
	3.5
	4
	4.5
	5
	one point

	= 4	substantial
	< 4	
	< 3	noticeable
	< 2	marginal
	< 1	
	= 0	same
	> -1	marginal
	> -2	
	> -3	noticeable
	> -4	substantial
	= -4	

B1. Labeled Heatmaps: Averaged base data 2D.

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B1. Labeled Heatmaps: Averaged base data i3D.

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B1. Labeled Heatmaps: Averaged base data SPLOM.

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B1. Labeled Heatmaps: SPLOM - 2D.

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B1. Labeled Heatmaps: i3D - max(2D, SPLOM).

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B1. Labeled Heatmaps: 2D - max(2D from other DRs).

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B1. Labeled Heatmaps: SPLOM - max(2D from all DRs).

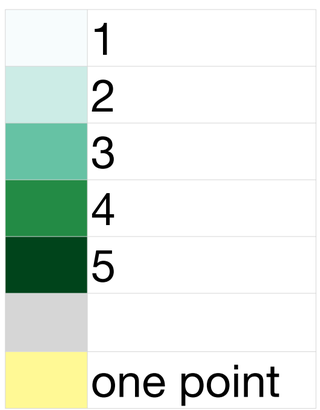
dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

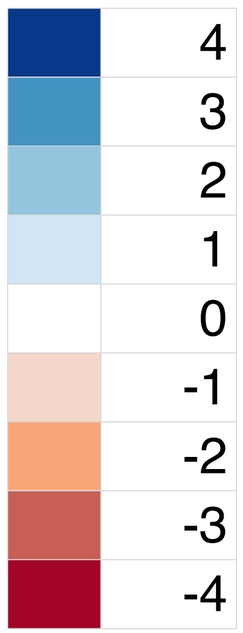
B1. Labeled Heatmaps: i3D - max(SPLOM, 2D from all DRs).

dataset	family	PCA	robPCA	GLIMMER	t-SNE
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B2. Separate Heatmaps for Coders

not in the paper





B2. Heatmaps Coder A: Base data 2D.

dataset	family	PCA - 2D	robPCA - 2D	glimmer - 2D	tsne - 2D
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B2. Heatmaps Coder B: Base data 2D.

dataset	family	PCA - 2D	robPCA - 2D	glimmer - 2D	tsne - 2D
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B2. Heatmaps Coder A: Base data i3D.

dataset	family	PCA - 3D	robPCA - 3D	glimmer - 3D	tsne - 3D
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B2. Heatmaps Coder B: Base data i3D.

dataset	family	PCA - 3D	robPCA - 3D	glimmer - 3D	tsne - 3D
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B2. Heatmaps Coder A: Base data SPLOM.

dataset	family	PCA - SPLOM	robPCA - SPLOM	glimmer - SPLOM	tsne - SPLOM
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B2. Heatmaps Coder B: Base data SPLOM.

dataset	family	PCA - SPLOM	robPCA - SPLOM	glimmer - SPLOM	tsne - SPLOM
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B3. Difference Heatmap between Coders

not in the paper

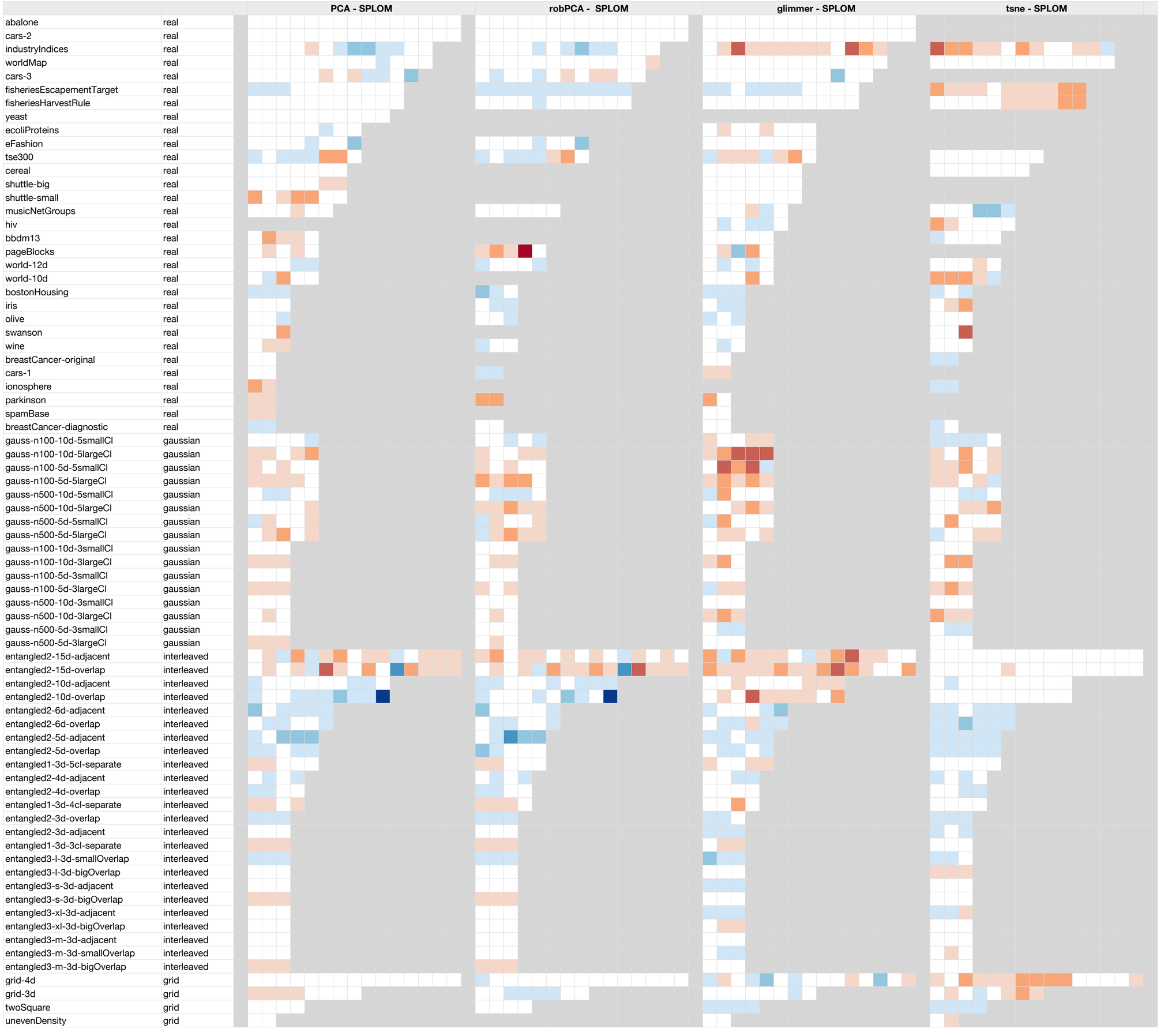
B3. Difference Heatmap: Coder A - Coder B for 2D.

		PCA - 2D	robPCA - 2D	glimmer - 2D	tsne - 2D
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B3. Difference Heatmap: Coder A - Coder B for i3D.

		PCA - 3D	robPCA - 3D	glimmer - 3D	tsne - 3D
abalone	real				
cars-2	real				
industryIndices	real				
worldMap	real				
cars-3	real				
fisheriesEscapementTarget	real				
fisheriesHarvestRule	real				
yeast	real				
ecoliProteins	real				
eFashion	real				
tse300	real				
cereal	real				
shuttle-big	real				
shuttle-small	real				
musicNetGroups	real				
hiv	real				
bbdm13	real				
pageBlocks	real				
world-12d	real				
world-10d	real				
bostonHousing	real				
iris	real				
olive	real				
swanson	real				
wine	real				
breastCancer-original	real				
cars-1	real				
ionosphere	real				
parkinson	real				
spamBase	real				
breastCancer-diagnostic	real				
gauss-n100-10d-5smallCl	gaussian				
gauss-n100-10d-5largeCl	gaussian				
gauss-n100-5d-5smallCl	gaussian				
gauss-n100-5d-5largeCl	gaussian				
gauss-n500-10d-5smallCl	gaussian				
gauss-n500-10d-5largeCl	gaussian				
gauss-n500-5d-5smallCl	gaussian				
gauss-n500-5d-5largeCl	gaussian				
gauss-n100-10d-3smallCl	gaussian				
gauss-n100-10d-3largeCl	gaussian				
gauss-n100-5d-3smallCl	gaussian				
gauss-n100-5d-3largeCl	gaussian				
gauss-n500-10d-3smallCl	gaussian				
gauss-n500-10d-3largeCl	gaussian				
gauss-n500-5d-3smallCl	gaussian				
gauss-n500-5d-3largeCl	gaussian				
entangled2-15d-adjacent	interleaved				
entangled2-15d-overlap	interleaved				
entangled2-10d-adjacent	interleaved				
entangled2-10d-overlap	interleaved				
entangled2-6d-adjacent	interleaved				
entangled2-6d-overlap	interleaved				
entangled2-5d-adjacent	interleaved				
entangled2-5d-overlap	interleaved				
entangled1-3d-5cl-separate	interleaved				
entangled2-4d-adjacent	interleaved				
entangled2-4d-overlap	interleaved				
entangled1-3d-4cl-separate	interleaved				
entangled2-3d-overlap	interleaved				
entangled2-3d-adjacent	interleaved				
entangled1-3d-3cl-separate	interleaved				
entangled3-l-3d-smallOverlap	interleaved				
entangled3-l-3d-bigOverlap	interleaved				
entangled3-s-3d-adjacent	interleaved				
entangled3-s-3d-bigOverlap	interleaved				
entangled3-xl-3d-adjacent	interleaved				
entangled3-xl-3d-bigOverlap	interleaved				
entangled3-m-3d-adjacent	interleaved				
entangled3-m-3d-smallOverlap	interleaved				
entangled3-m-3d-bigOverlap	interleaved				
grid-4d	grid				
grid-3d	grid				
twoSquare	grid				
unevenDensity	grid				

B3. Difference Heatmap: Coder A - Coder B for SPLOM.



C. Selected Examples

C1. Within-DR: SPLOM > 2D

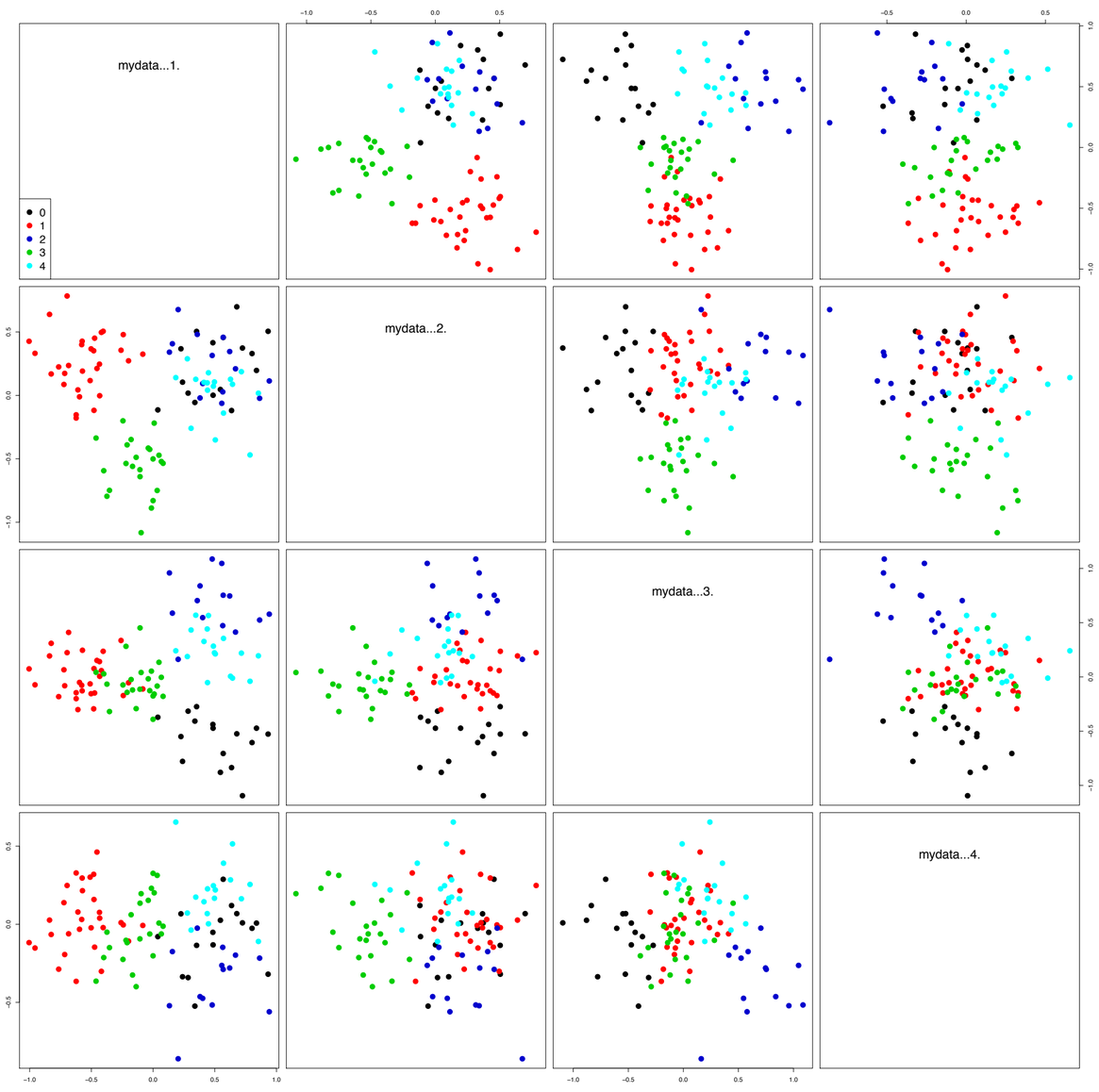
Examples where SPLOM added class separability within the same DR technique.

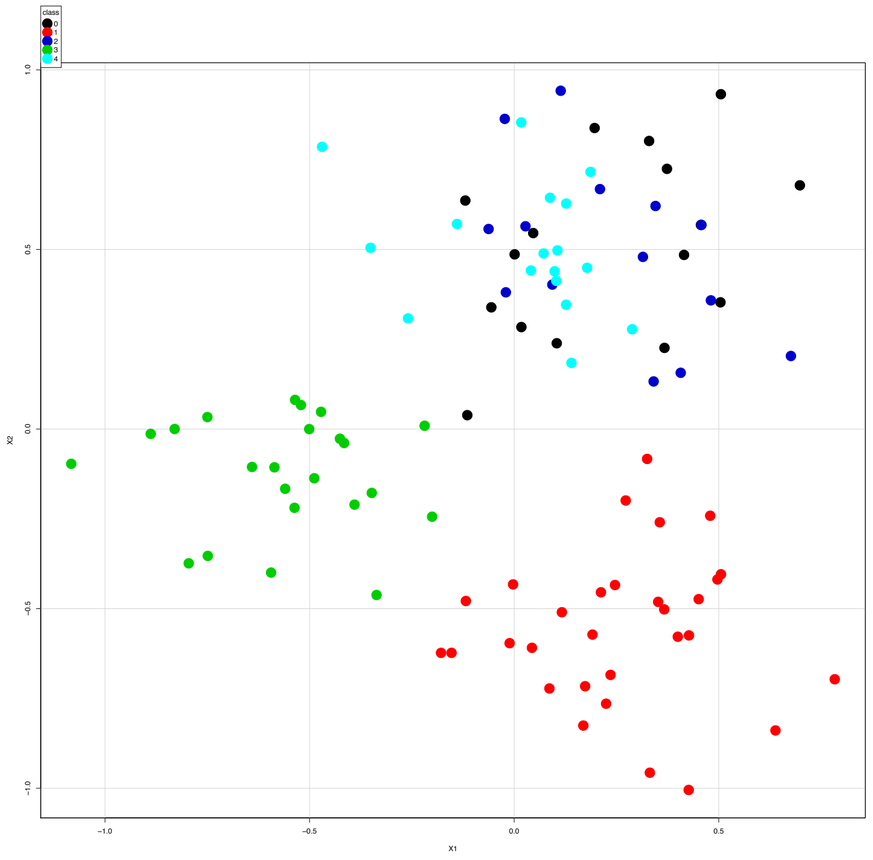
Note: Ratings are provided from Coder A

C1. Within-DR - SPLOM (Figure 4a from the paper):

dataset: gauss-n100-10d-5smallCl

DR: robust PCA





Classwise Ratings:

1	5	1	5	1

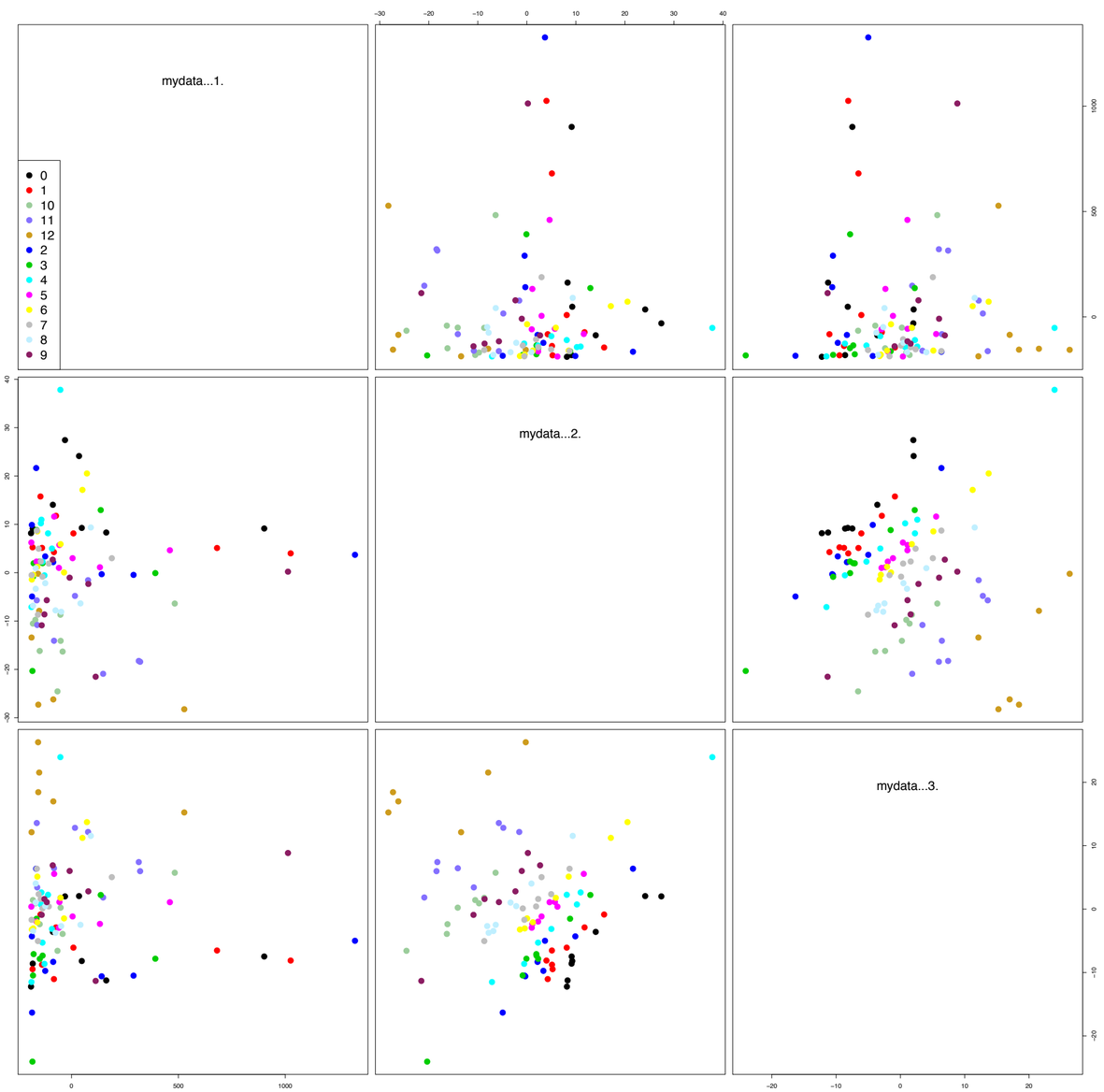
Classwise ratings and selected views:

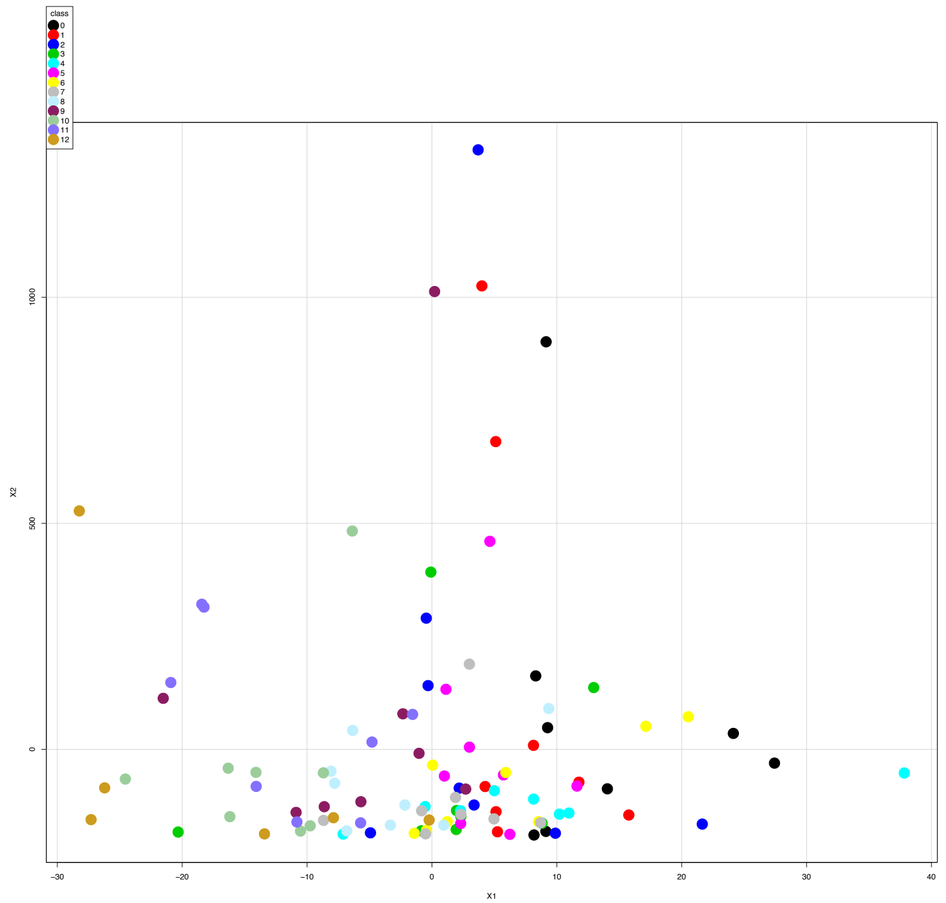
5-2x3	5-1x2	5-3x4	5-1x2	5-1x3

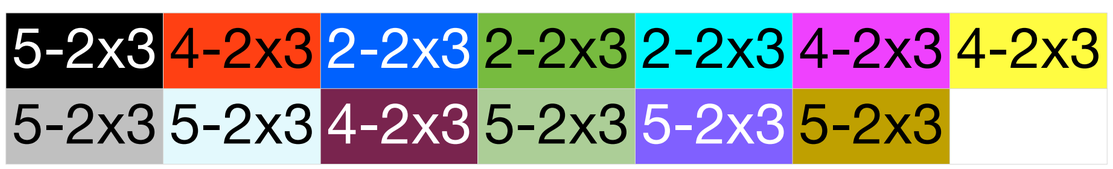
C1. Within-DR - SPLOM (Figure 4b from the paper):

dataset: industryIndices

DR: PCA



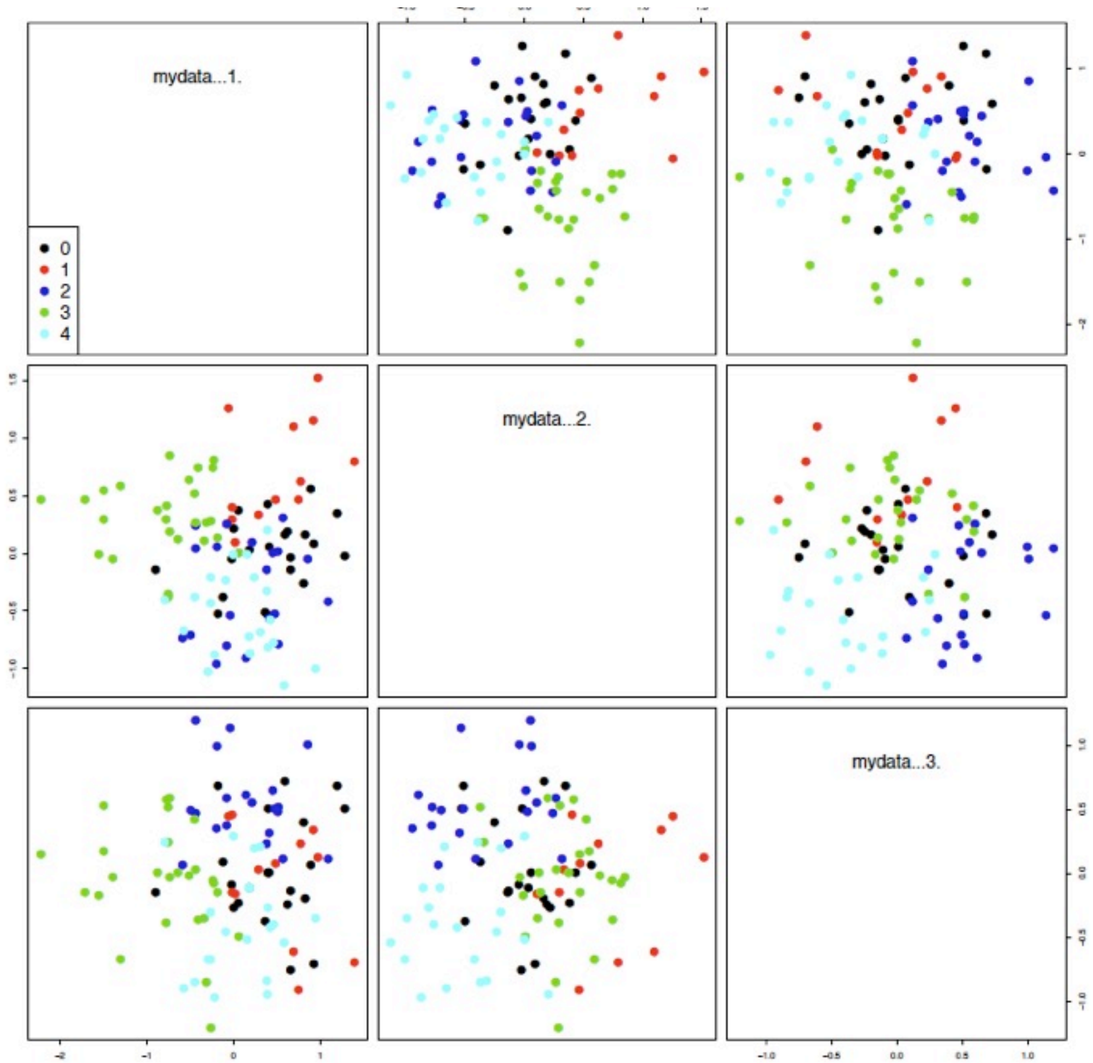


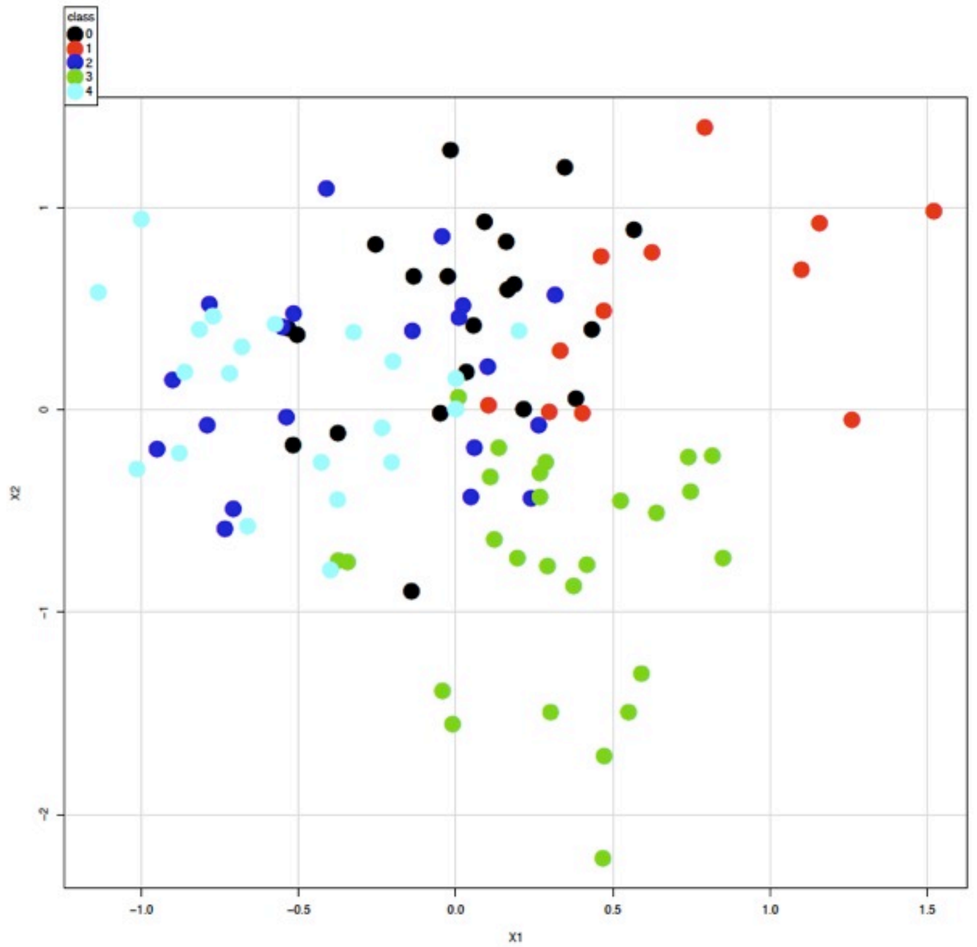


C1. Within-DR - SPLOM (not in the paper):

dataset: gauss-n100-10d-5largeCl

DR: robust PCA





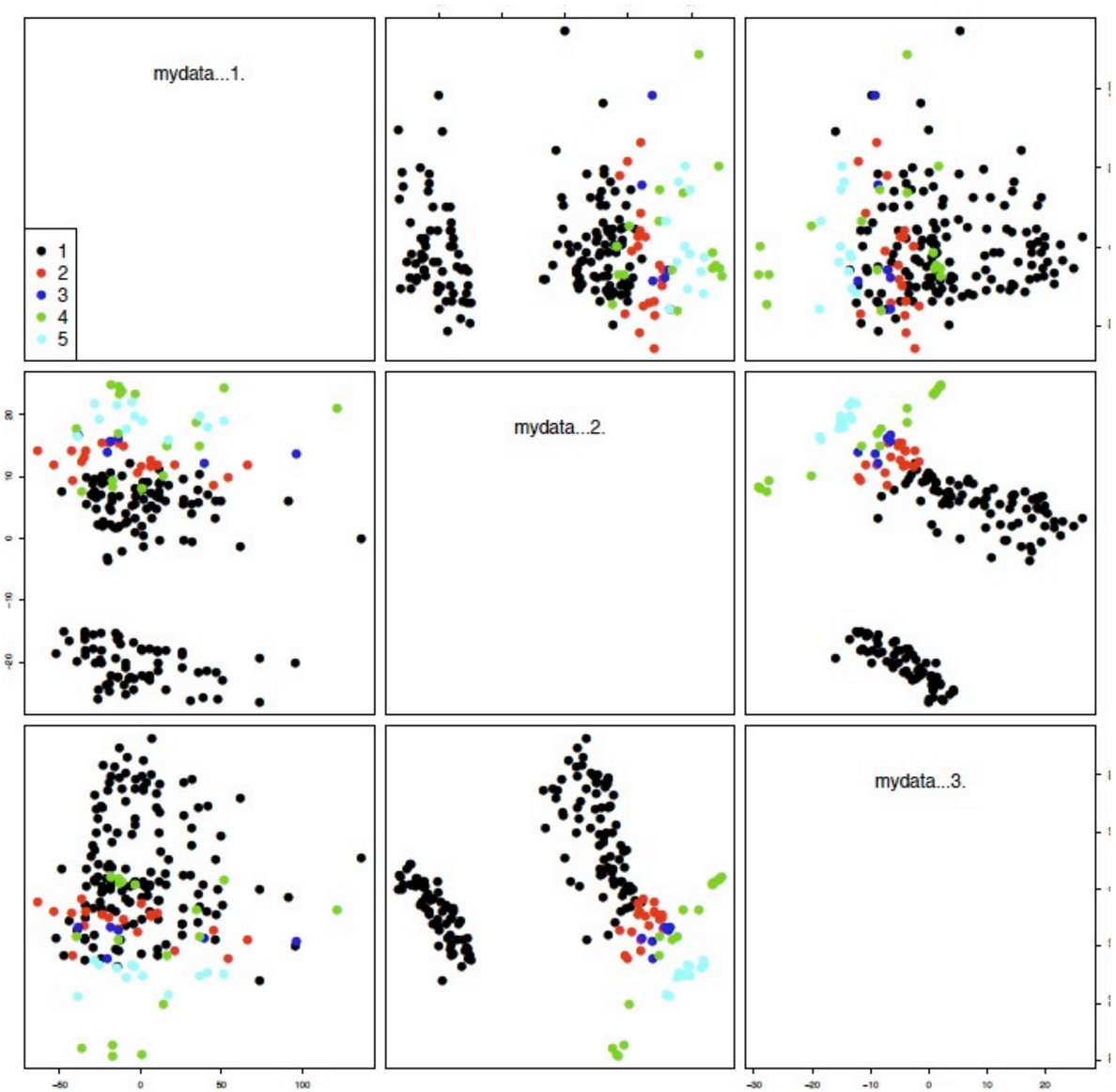
1 3 1 3 1

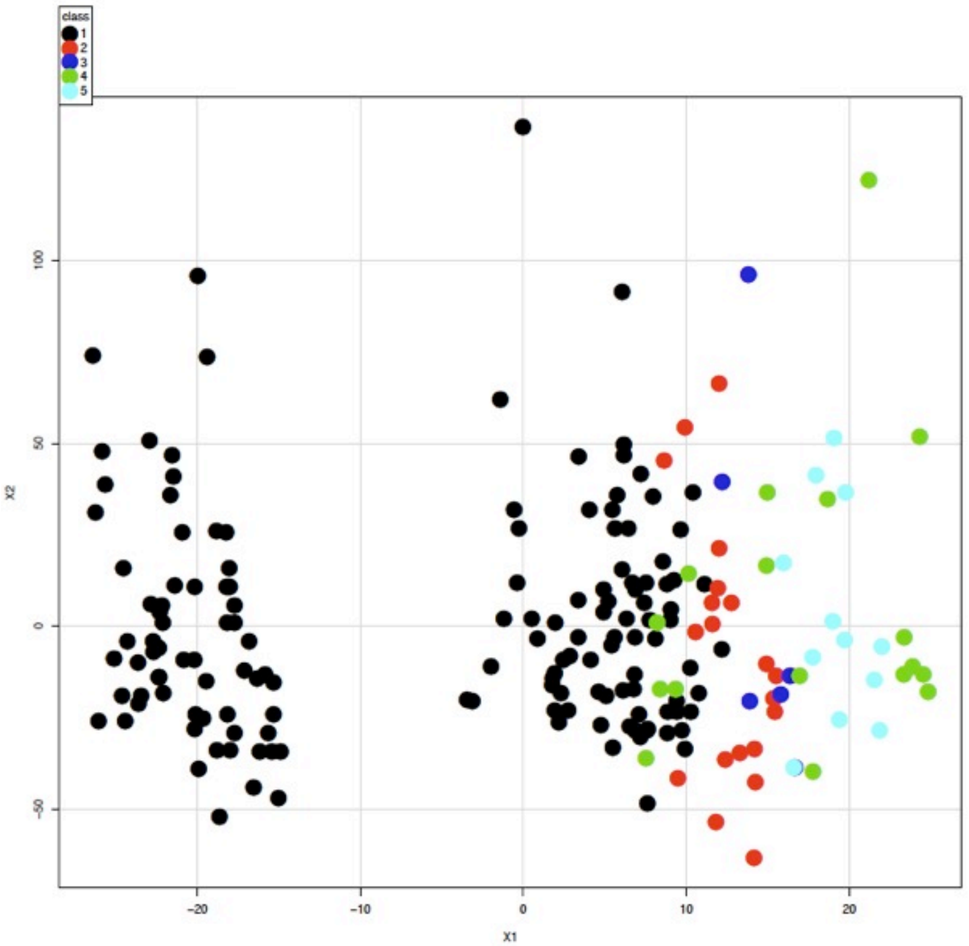
1 3-1x2 3-2x3 3-1x2 3-2x3

C1. Within-DR - SPLOM (not in the paper):

dataset: bbdm13

DR: PCA





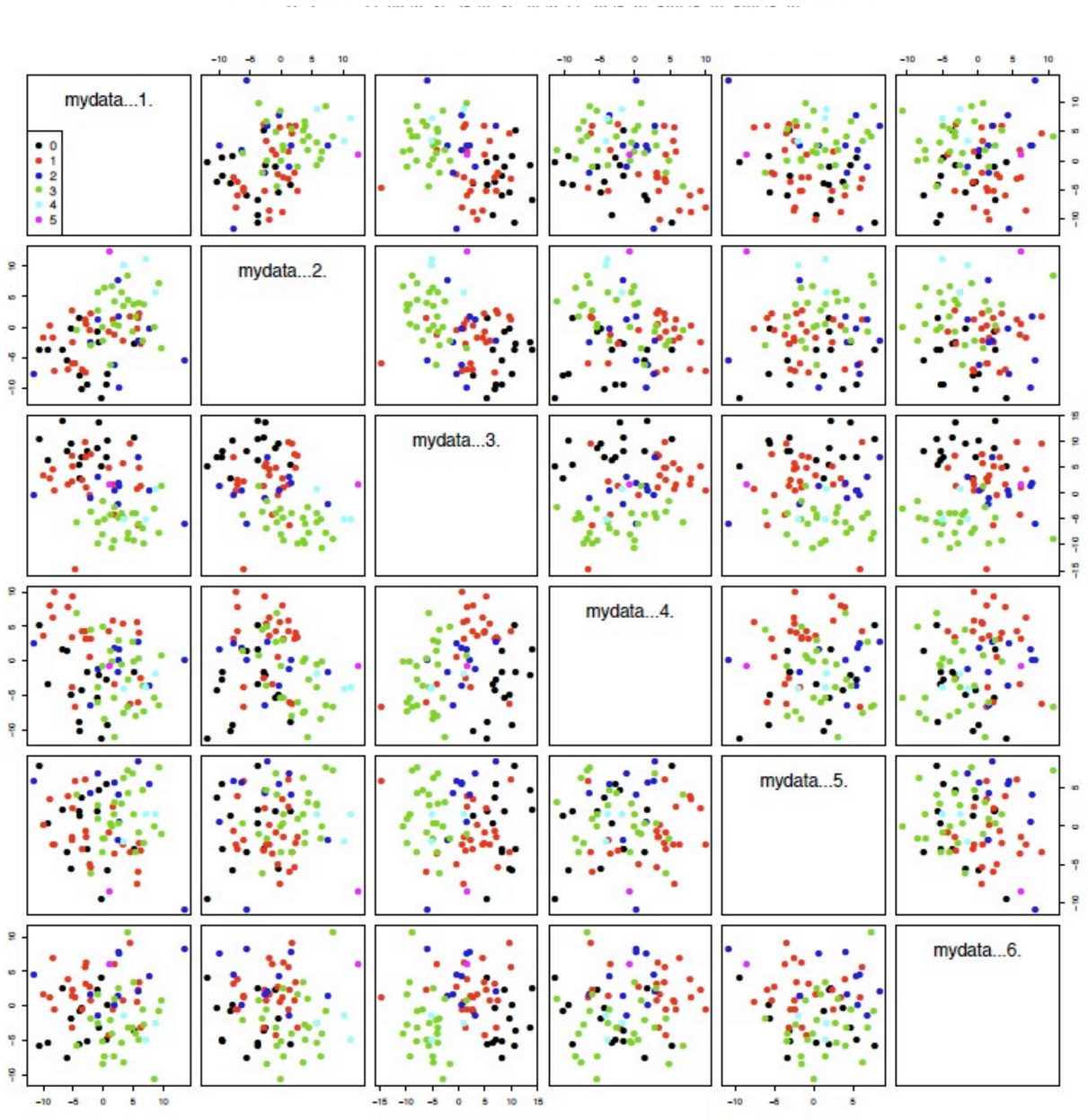
5-2x3 3-2x3 3-2x3 3-2x3 5-2x3

4 3 1 1 3

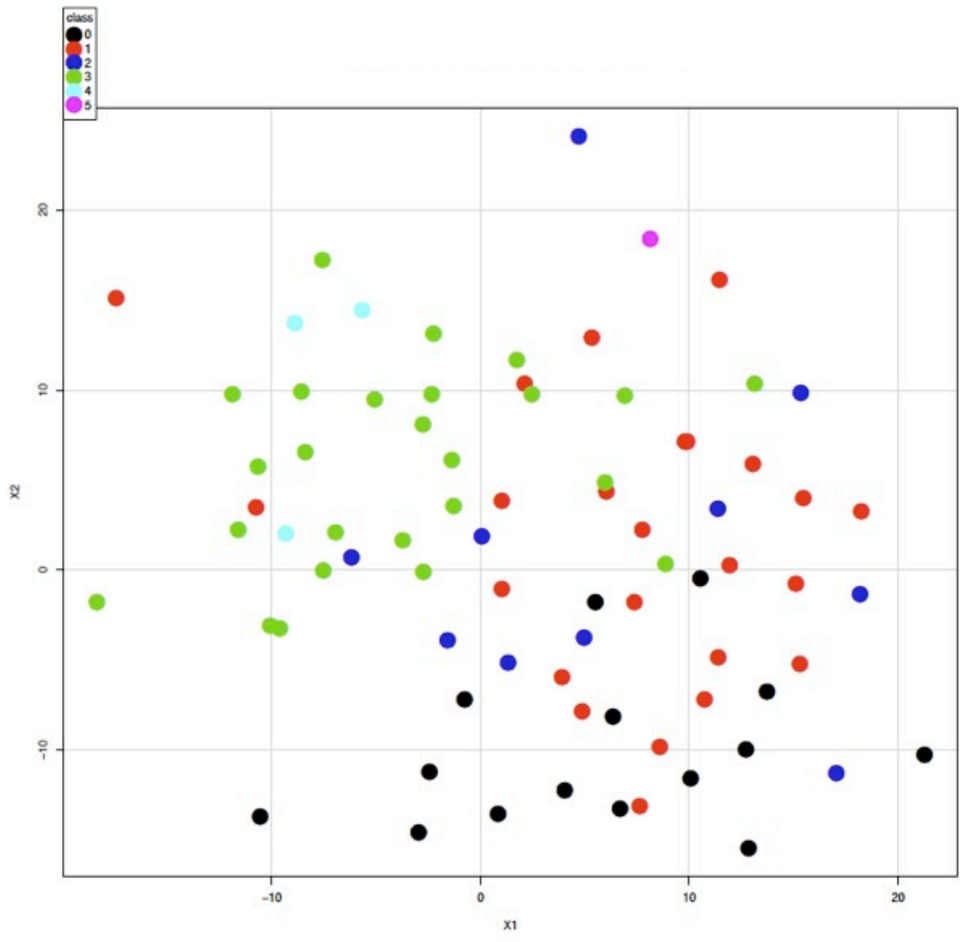
C1. Within-DR - SPLOM (not in the paper):

dataset: hiv

DR: glimmer MDS



3-2x3 | 3-4x6 | 1 | 4-3x6 | 2-2x5 | 99

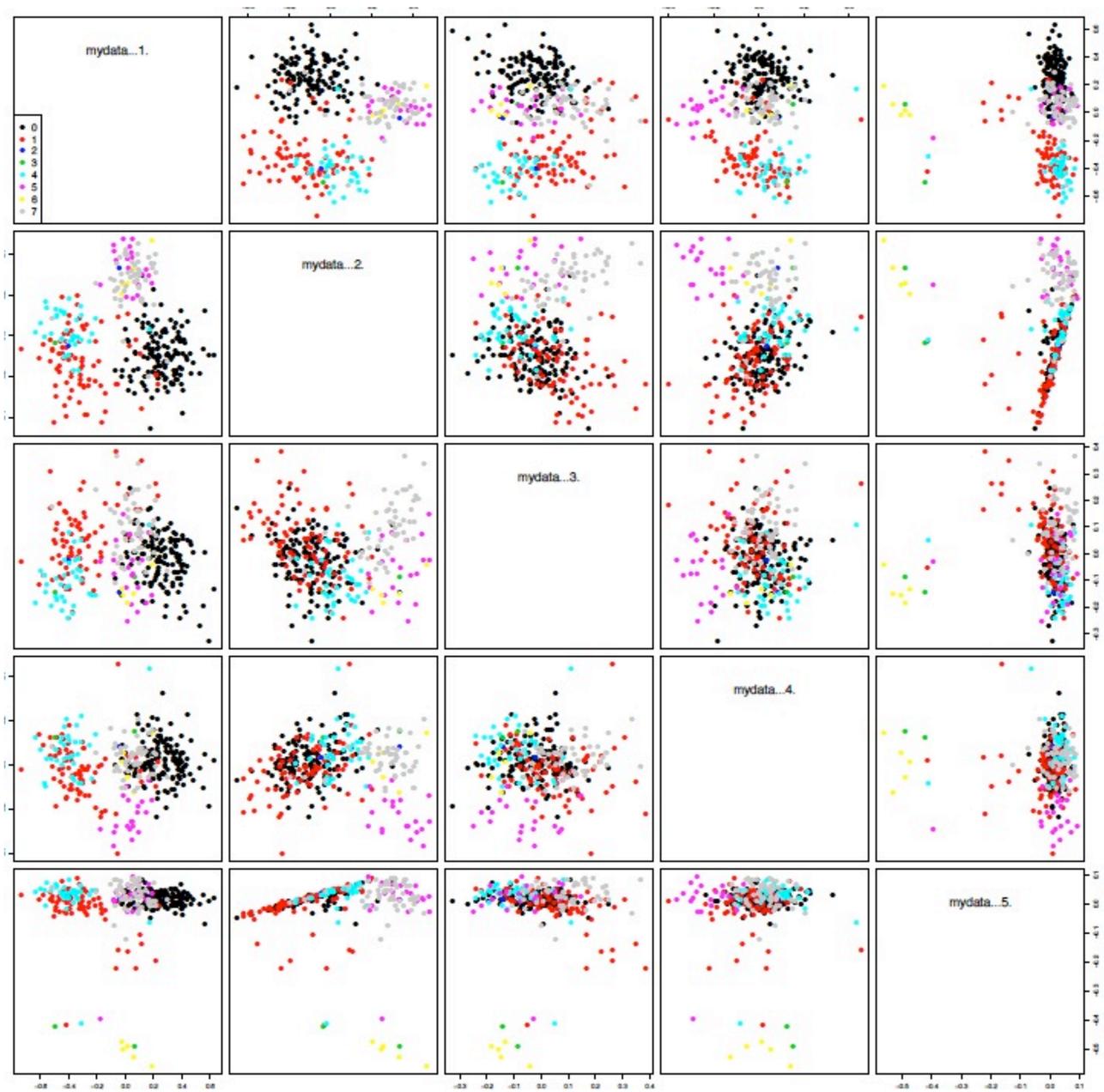


2 | 2 | 1 | 3 | 1 | 99

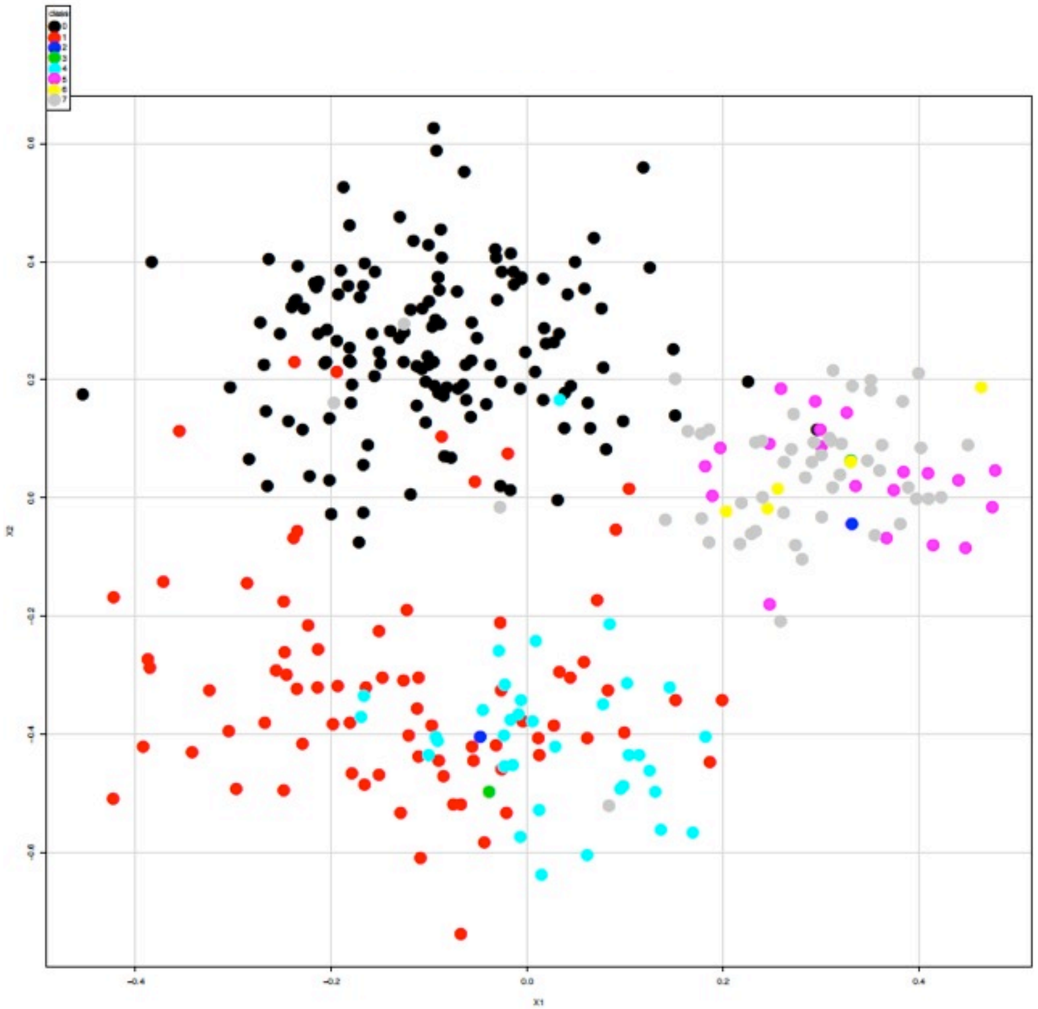
C1. Within-DR - SPLOM (not in paper):

dataset: ecoliProteins

DR: PCA



4-1x2 | 3-1x2 | 1 | 5-4x5 | 2-1x3 | 5-2x4 | 5-4x5 | 3-2x3



4 | 3 | 1 | 1 | 2 | 2 | 1 | 3

C2. Within-DR:
i3D > max(2D,SPLOM)

see video

(17.7 MB, no audio, tested on VLC 1.1.12)

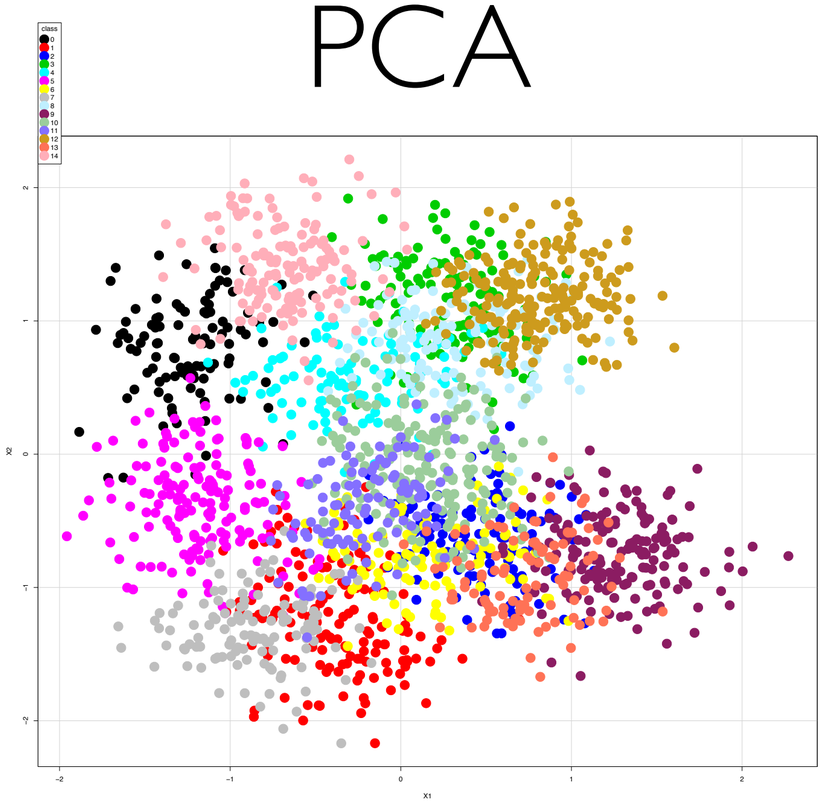
C3. Between-DR

Examples where one DR provided notably or substantially better class separability than other DR techniques.

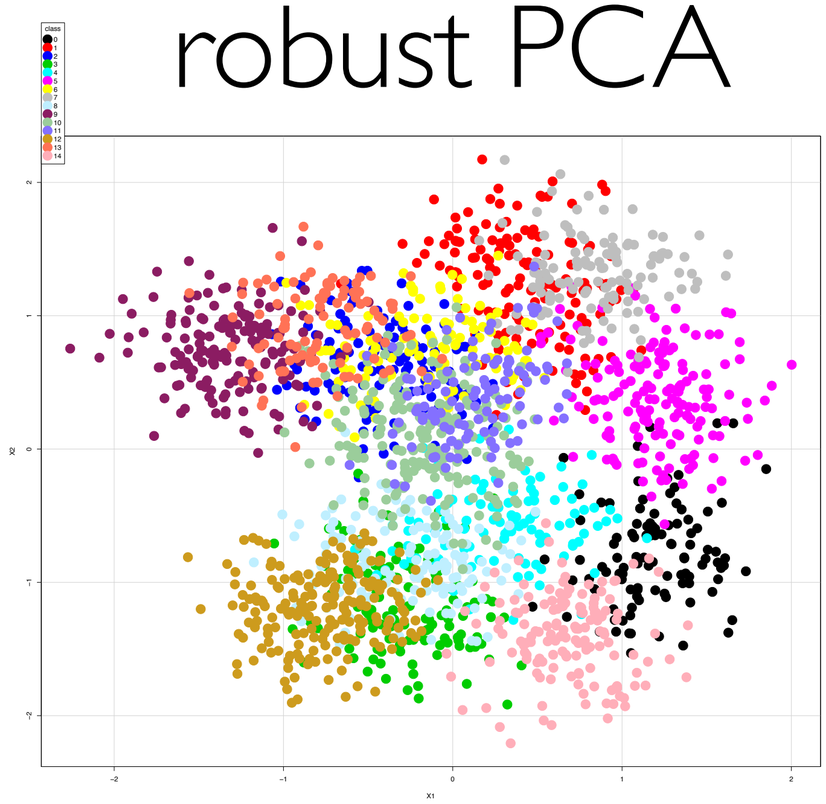
C3. Between-DR (Figure 5 e/f from the paper):

dataset: entangled2-15d-adjacent

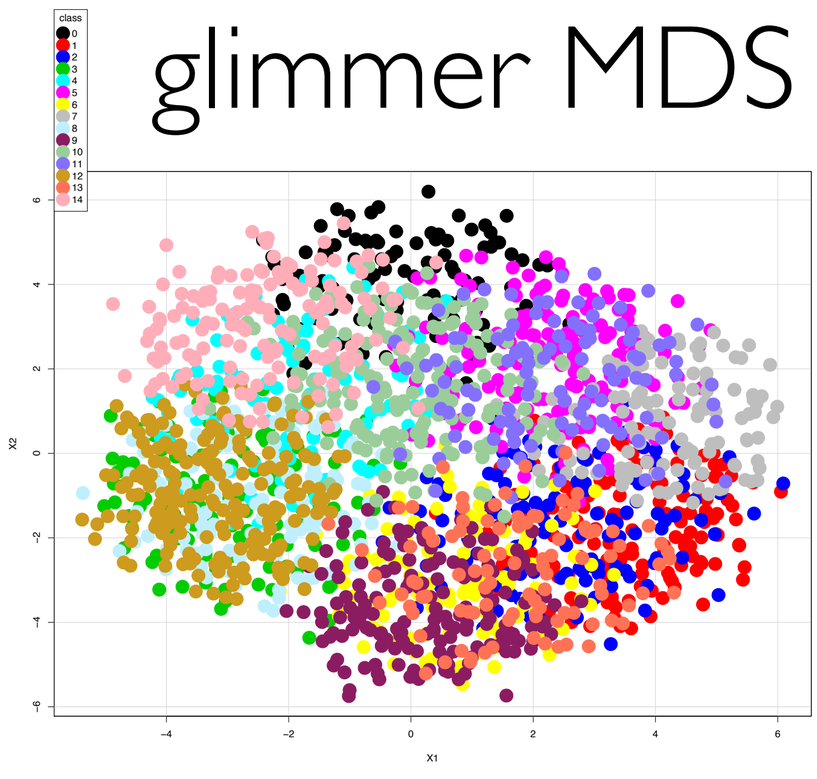
PCA



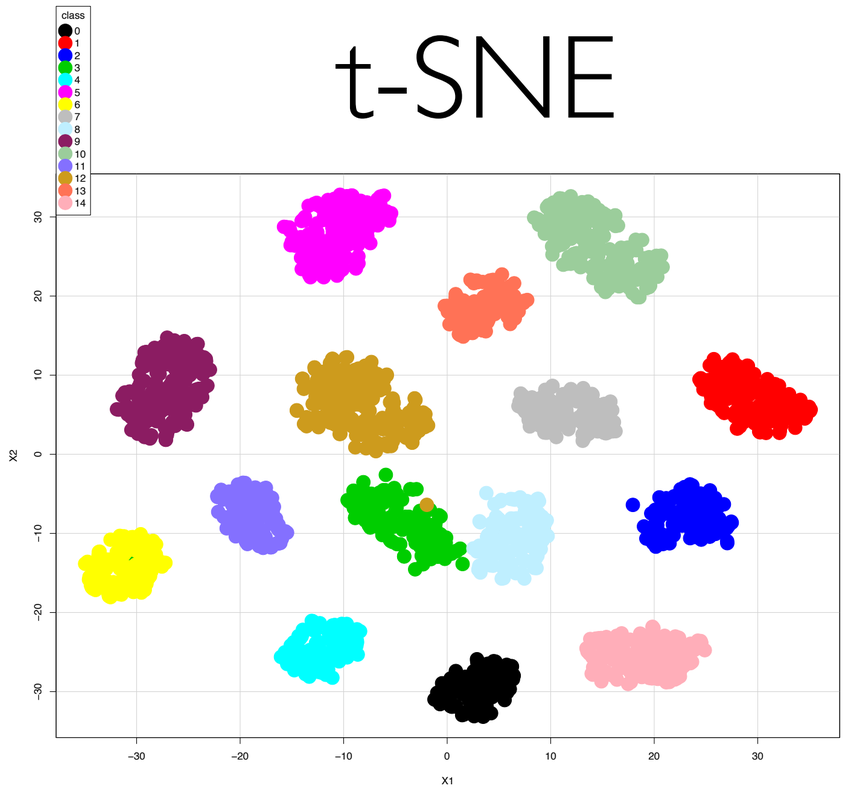
robust PCA



glimmer MDS



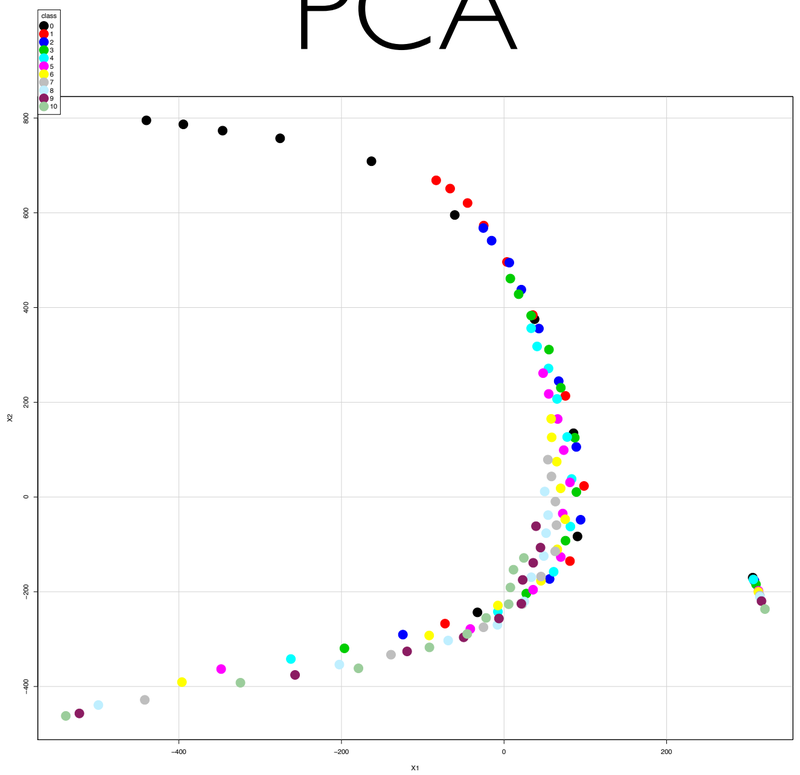
t-SNE



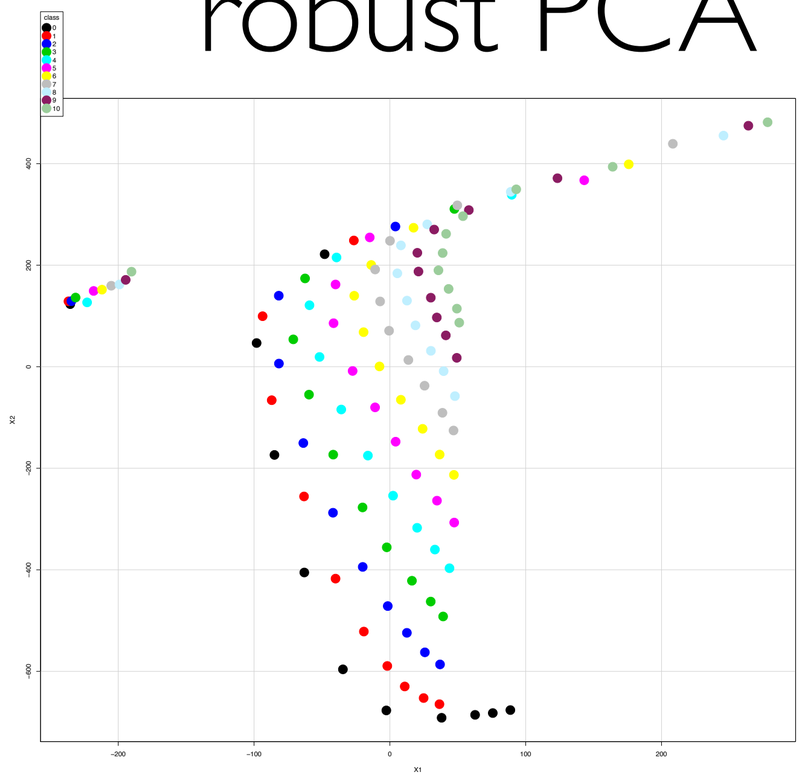
C3. Between-DR (not in the paper):

dataset: fisheriesEscapementTarget

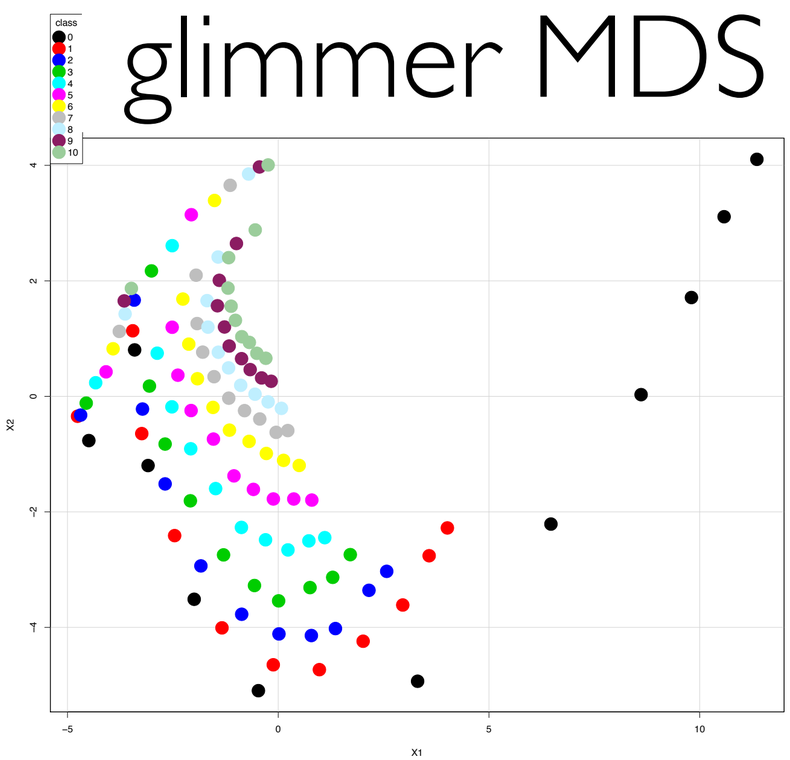
PCA



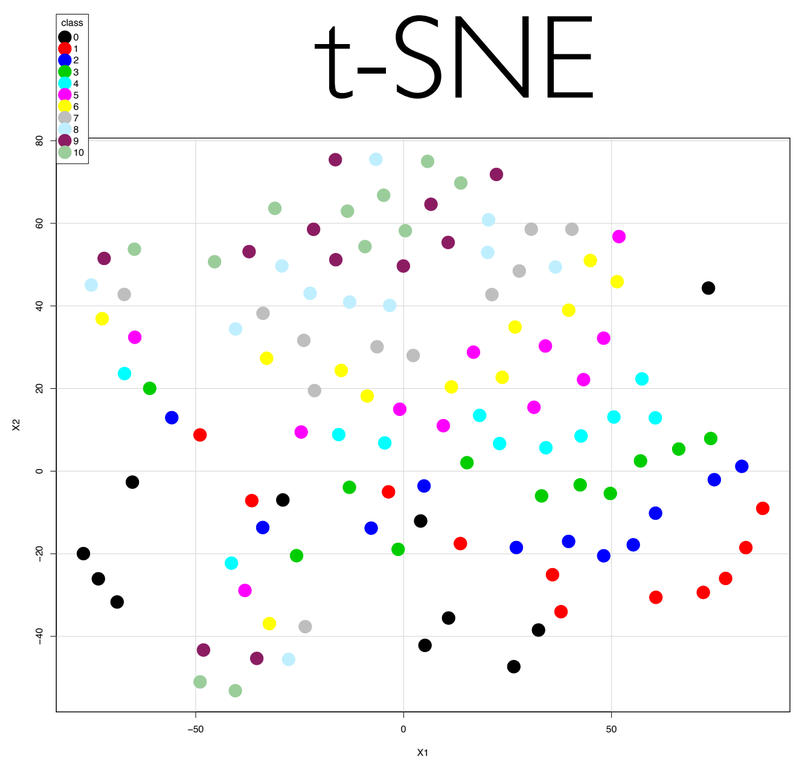
robust PCA



glimmer MDS



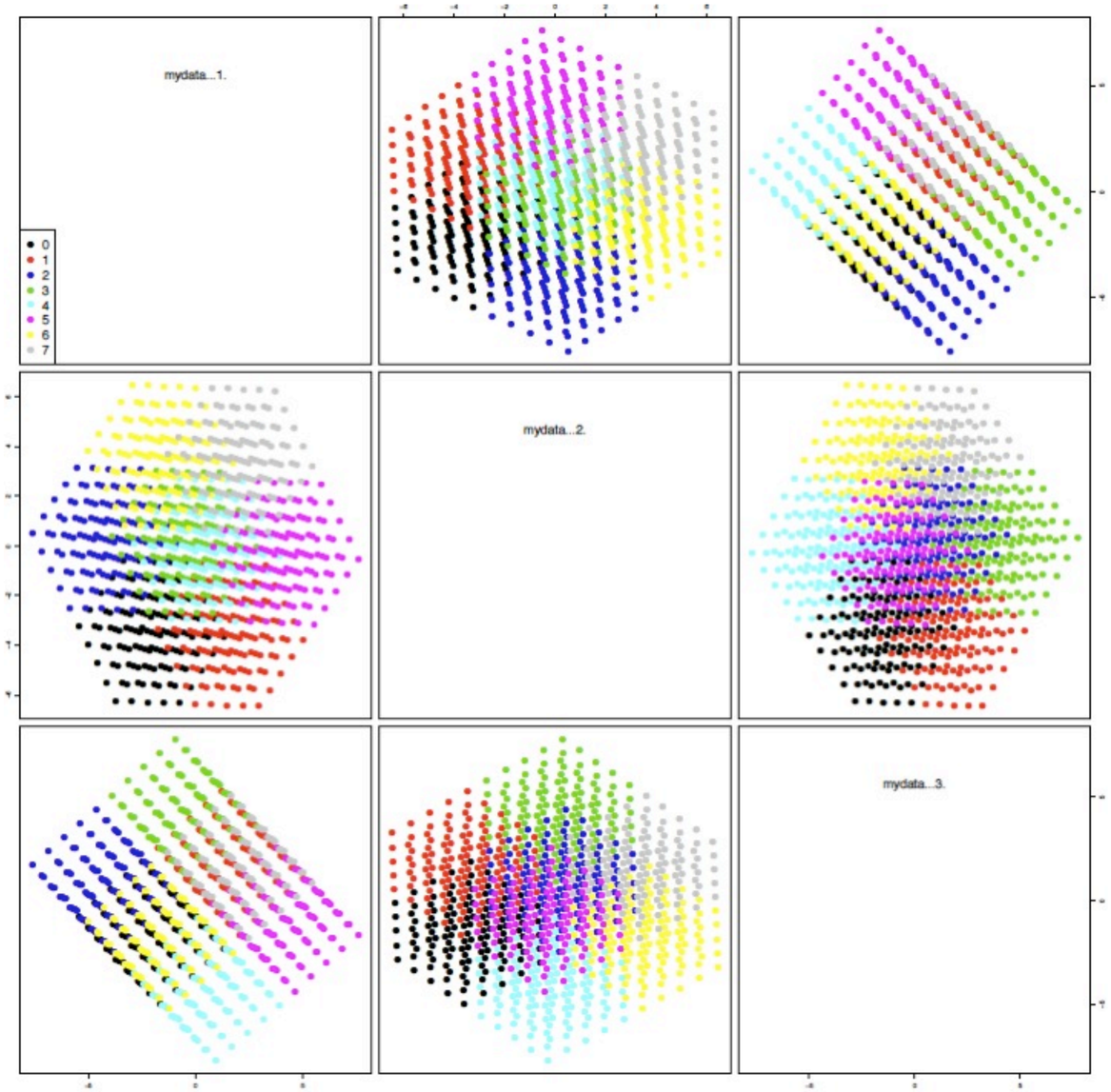
t-SNE



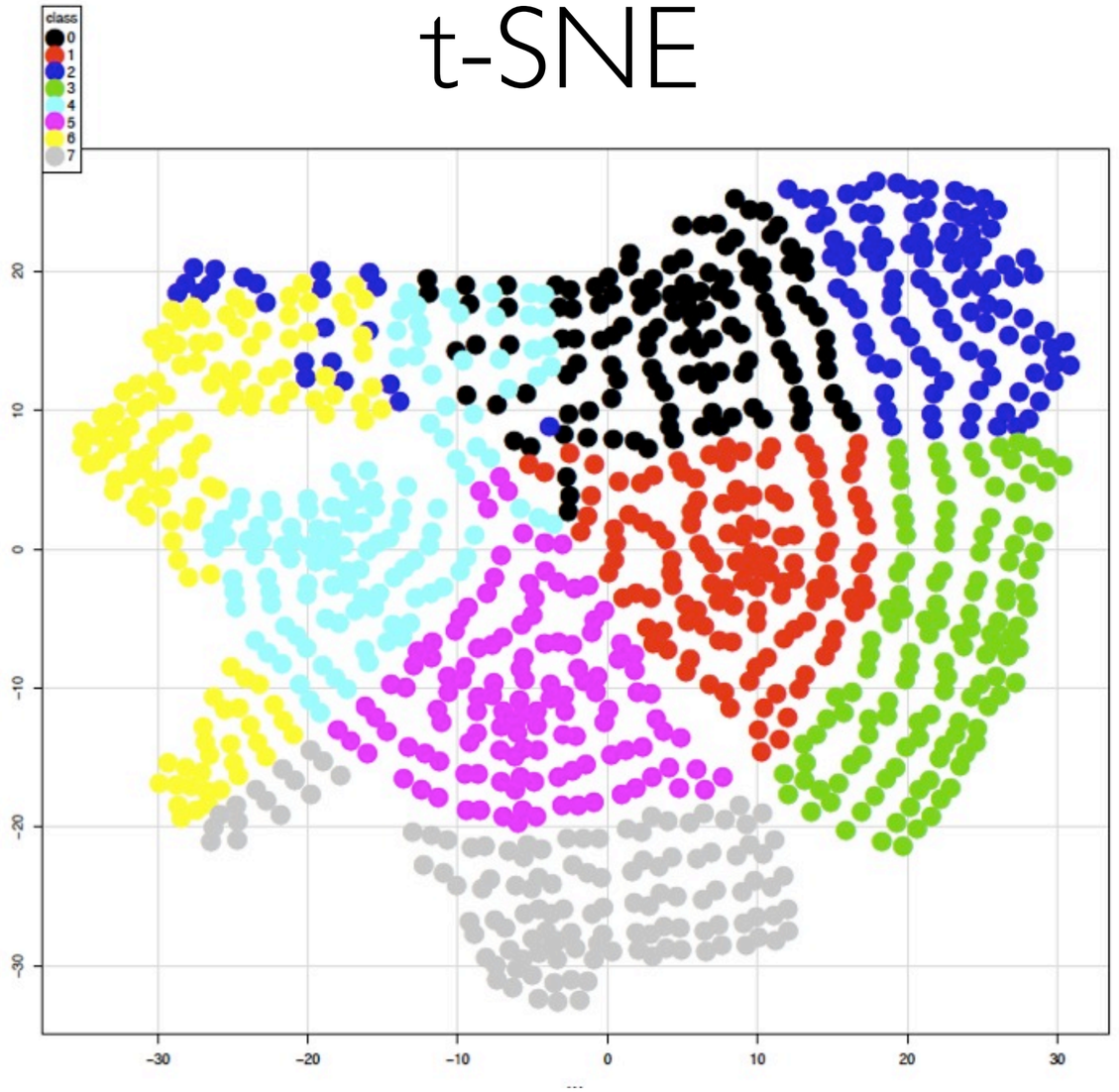
C3. Between-DR (not in the paper):

dataset: grid10_3d

robust PCA



t-SNE



D. SPLOM Evaluation

extending upon Section 5.5.
of the paper.

Both coders kept track of the dimensionality of the SPLOMs as well as the number of views they used for the cluster verification task. We analyzed the data for which SPLOMs were marked by the coders marked as the 'winner' for a DR x dataset combination. In doing so, we exclude cases where a linear (PCA, robust PCA) SPLOM was equally good as the 2D version. In such cases, a single component of the SPLOM would be enough, and so this case should not be represented as a true count of how SPLOMs are used because it would bias towards lower dimensionality and fewer views.

Figure 1 shows the dimensionality of the winners: there is a linear decrease in dimensionality, with a maximum of 7 and a mean of 4.1. **Figure 2** shows the number of views used within a SPLOM. In 88% of the cases, between 1 and 4 views revealed the necessary class structure. The average number of used views is only 2.7, and the maximum is 11 views. These findings indicate that when using SPLOMs for cluster verification in DR data their size is limited and thus they are indeed usable. In particular, these findings show that our usability cost assumptions are not violated.

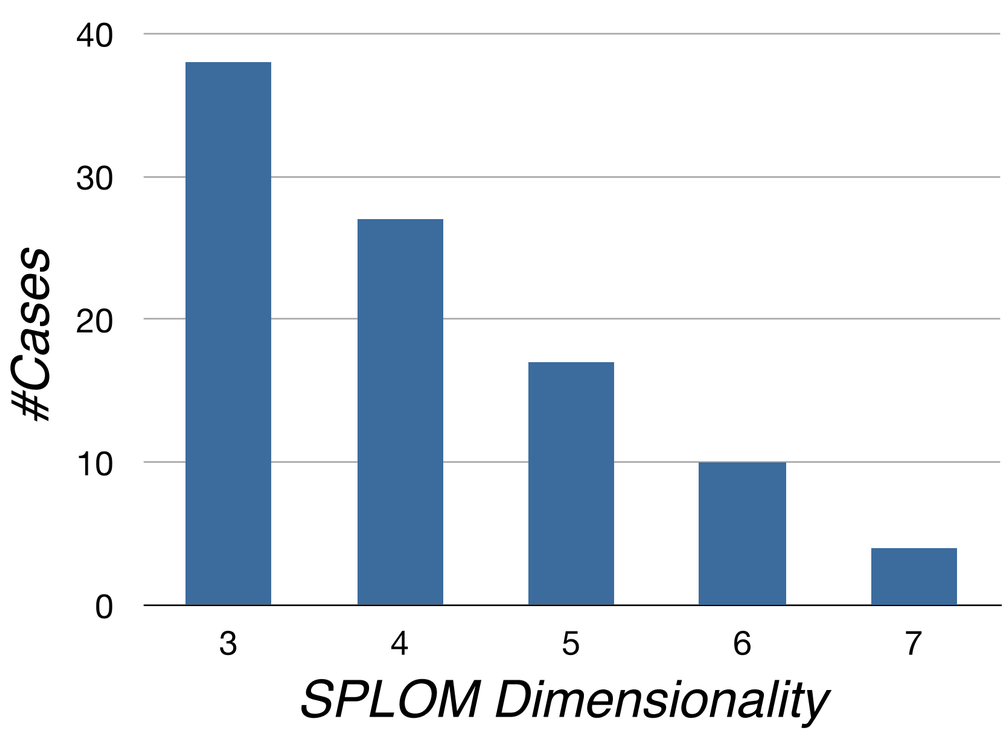


Figure 1: Dimensionality of SPLOMS used (max=7, mean=4.1);

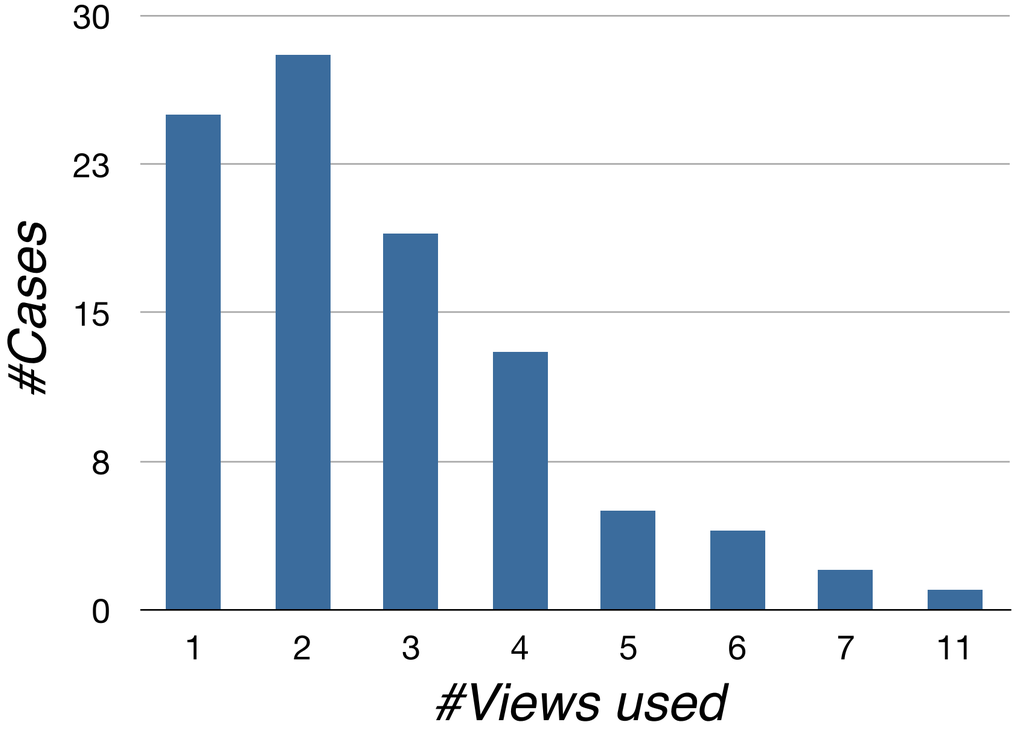


Figure 2: The numbers of views used for cluster verification (max=11, mean=2.7).

E. Coding Guidelines

The following table summarizes guidelines that both coders used for judging class separation.

Acronym	Description	Guideline
	Goodness Factors	
no-overlap	Class has no overlap with any other class.	Good classes, ie 5, are classes that have no overlap and which points are connected to each other. (Use concept of convex hull as rough estimator for overlap judgments)
connected	Points of a class are visually connected to each other. In particular, they should not be interrupted by points of another class.	
	Badness Factors	
full-mixture	Cluster is heavily intermixed and fully overlapped with one or more other ones. No visible class structure is visible.	Those classes should be rated as bad, ie 1.
partial-mixture	Cluster is partially overlapped with one or more other clusters.	According to the degree of partial overlap, classes should be judged between 4 and 1.
disconnected	Points of a cluster appear disconnected.	According to the degree of disconnectedness, classes should be judged between 4 and 1.
multiple-outliers	Multiple outliers exist.	While single and obvious outliers should not have a negative impact on class separability judgements, multiple outliers can decrease the score of a class.
	Robustness Factors	
adjacent	Adjacent classes: no physical distance between classes.	As long as there is no overlap between classes, adjacent, connected classes should be judged as good, ie 5.
equidistant-mixed	Dataset with partly or fully overlapped classes and equidistant point structure.	Equidistant point structures should not lead to any other negative impact as compared to randomly distributed class structures.
single-outlier	A single outlier exists.	Single and obvious outliers should not have a negative impact on class separability judgements. Whether a single outlier is obvious also depends on the number of points of that class.
shape	The shape of a cluster is important for its detection.	The shape of a cluster should not negatively impact class separation judges.
sparse	Data of a class is sparsely distributed in view.	Different densities should not negatively impact class separation judges .
unbalanced-classes	Classes differ strongly in no. of points / class.	Differences of no. of points should not negatively impact class separation judges.
periphery	Clusters at the periphery might be easier to spot.	All visual encodings should be carefully checked for such phenomena in order not to incorrectly judge class separation.
z-depth	Z-depth might influence your decision.	
3D-move	Movement of points in 3D helps to detect a cluster (Gestalt law: Common fate).	i3D should be carefully checked for such phenomena in order not to incorrectly judge class separation.
3D-bg-noise	The background noise in 3D makes detectability of clusters harder.	
3D-inner-class	Inner clusters usually okay in 2D and SPLOM but not in 3D.	
	Specific Class Scores	
1-point-class	Class with only 1 point.	1-point classes get a special label, they can not be used in the study as the separation of a 1-point class is not meaningful. Mark with “99”.
no-DR-computation	DR embedding couldn’t be computed for this dataset.	Mark all classes with “NA”.