

Dataset	5% CS						KMEANS
	PCCC	PCCC-R	COPKM	CSC	DILS	LCC	
Appendicitis	0.2	0.5	0.0	3.0	569.5	6.6	0.2
Breast Cancer	0.4	1.0	–	9.4	1,825.1	122.5	0.2
Bupa	0.4	1.1	–	9.3	1,810.0	21.9	0.1
Circles	0.4	0.6	–	4.4	1,433.5	8.4	0.1
Ecoli	2.4	4.2	0.7	4.9	1,547.2	47.5	0.2
Glass	1.2	2.2	0.3	4.9	1,035.8	33.9	0.1
Haberman	0.4	1.0	–	5.2	1,516.3	8.9	0.1
Hayesroth	0.4	1.4	0.0	2.5	788.5	7.0	0.1
Heart	0.5	1.1	–	5.9	1,557.0	29.3	0.1
Ionosphere	0.3	1.1	–	6.5	1,806.0	83.3	0.2
Iris	0.3	1.3	0.1	2.9	717.9	6.7	0.1
Led7Digit	1.9	4.9	0.9	10.1	1,812.5	–	0.1
Monk2	0.8	1.8	–	11.5	1,807.7	27.9	0.1
Moons	0.2	0.8	0.1	7.2	1,411.5	6.3	0.1
Movement Libras	3.2	6.8	4.7	4.6	1,811.4	910.4	0.3
Newthyroid	0.8	2.3	0.1	5.9	1,072.9	12.3	0.1
Saheart	0.6	1.3	–	10.2	1,805.9	45.5	0.1
Sonar	0.4	0.9	–	3.5	1,596.3	84.7	0.1
Soybean	0.2	0.6	0.1	1.5	234.3	20.8	0.1
Spectfheart	0.3	1.3	–	4.3	1,812.9	78.8	0.2
Spiral	0.3	1.2	–	5.8	1,467.1	7.2	0.2
Tae	0.5	1.6	0.1	4.1	717.9	11.7	0.1
Vehicle	2.8	8.0	–	15.5	1,818.8	313.9	0.1
Wine	0.5	1.2	0.2	2.4	963.2	22.3	0.1
Zoo	0.4	1.4	0.2	2.8	520.4	26.8	0.1
Sum	19.9	49.8	21,607.6*	148.3	33,459.6	3,744.7*	3.4

*Nan values (–) are replaced with 1,800 before computing the sum.

Table W9: Average running times (in seconds) of the PCCC and the PCCC-R algorithms and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) for the constraint sets of size 5% CS. The lowest values are stated in bold. The column KMEANS reports the average running time of the unconstrained k-means algorithm. The hyphen indicates that the respective algorithm returned no solution within the time limit of 1,800 seconds.