

Dataset	15% CS						KMEANS
	PCCC	PCCC-R	COPKM	CSC	DILS	LCC	
Appendicitis	0.1	0.1	–	7.1	591.3	29.8	0.1
Breast Cancer	0.0	0.1	167.9	11.3	1,832.3	36.4	0.1
Bupa	0.1	0.1	46.8	6.1	1,809.4	–	0.1
Circles	0.1	0.1	30.2	7.0	1,777.4	1,880.8	0.1
Ecoli	1.7	3.3	–	6.2	1,809.3	266.3	0.1
Glass	1.2	2.7	–	7.6	1,118.8	617.0	0.1
Haberman	0.0	0.1	17.5	5.3	1,812.3	192.1	0.2
Hayesroth	0.4	0.8	–	3.5	881.9	70.9	0.1
Heart	0.1	0.2	20.1	2.4	1,774.1	577.9	0.1
Ionosphere	0.0	0.1	42.3	8.6	1,809.3	918.9	0.1
Iris	0.5	1.4	0.1	4.3	830.3	13.0	0.1
Led7Digit	4.9	14.3	–	4.6	1,823.1	–	0.1
Monk2	0.0	0.1	88.2	8.9	1,820.8	9.2	0.1
Moons	0.0	0.2	29.5	9.1	1,715.5	49.9	0.1
Movement Libras	7.4	16.9	25.5	6.5	1,802.1	1,732.8	0.2
Newthyroid	0.2	0.5	0.7	4.3	1,181.9	233.3	0.2
Saheart	0.0	0.1	87.5	6.4	1,806.8	–	0.1
Sonar	0.1	0.1	–	7.1	1,653.0	1,584.2	0.1
Soybean	0.2	0.7	0.2	1.2	256.6	20.7	0.1
Spectfheart	0.1	0.2	21.6	7.1	1,811.8	610.5	0.1
Spiral	0.0	0.1	–	8.2	1,780.2	105.7	0.0
Tae	0.3	1.2	–	3.4	773.7	88.2	0.1
Vehicle	0.2	0.5	295.9	14.3	1,852.7	–	0.1
Wine	0.6	1.5	0.5	7.3	1,061.3	70.5	0.1
Zoo	0.5	1.1	0.5	3.7	581.0	25.3	0.0
Sum	18.7	46.6	15,275.1*	161.4	35,966.8	16,333.5*	2.9

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

Table W23: 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 15% 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.