SA = Simulated Annealing PBIL = Population Based Incremental Learning	from Ventresca, M., 2012. Global search algorithms using a combinatorial unranking-based problem representation for the critical node detection problem. Computers & Operations Research 39, 2763–2775.
DFSH-Post = Depth First Search Heuristic with Postprocessing	Edalatmanesh, M., 2013. Heuristics for the critical node detection problem in large complex networks. Ph.D. thesis, Faculty of Mathematics and Science, Brock University, St. Catharines, Ontario.
Greedy = greedy algorithm	Ventresca, M., Aleman, D., 2015a. Efficiently identifying critical nodes in large complex networks. Computational Social Networks 2 (6).
Greedy3d and Greedy4d = constructive algorithms	Addis, B., Aringhieri, R., Grosso, A., Hosteins, P., 2016. Hybrid Constructive Heuristics for the Critical Node Problem. Annals of Operations Research 238 (1), 637–649.
Best VNS = Best VNS algorithm among all existing VNS variants Best among all VNS = best result for each instance among all 24 VNS variants Best ILS = Best ILS algorithm among all existing ILS variants Best among all ILS = best result for each instance among all 6 ILS variants	Aringhieri, R., Grosso, A., Hosteins, P., Scatamacchia, R., 2016. Local search metaheuristics for the critical node problem. Networks 67, 209–221.
Genetic = genetic algorithm with use of greedy rules	R. Aringhieri, A. Grosso, and P. Hosteins. A genetic algorithm for a class of critical node problems. In The 7th International Network Optimization Conference (INOC'15), volume 52 of Electronic Notes in Discrete Mathematics, pages 359-366, 2016 Aringhieri, R., Grosso, A., Hosteins, P., Scatamacchia, R., 2016. A general evolutionary framework for different classes of critical node problems. Engineering Applications of Artificial Intelligence, 55:128-145, 2016.
CNA1 = Critical Node Algorithm 1	W. Pullan, 2015. Heuristic identification of critical nodes in sparse real-world graphs. Journal of Heuristics 21, 577–598.
GRASP+PR = Greedy Randomized Adaptive Search Procedure with Path Relinking	D. Purevsuren, G. Cui, N.N.H. Win, X. Wang, 2016. Heuristic Algorithm for Identifying Critical Nodes in Graphs. Advances in Computer Science: an International Journa 5 (3).
exact = exact algorithms (used as target value, when available)	Veremyev, A., Boginski, V., Pasiliao, E., 2014. Exact identification of critical nodes in sparse networks via new compact formulations. Optimization Letters 8, 1245–1259. Di Summa, M., Grosso, A., Locatelli, M., 2012. Branch and cut algorithms for detecting critical nodes in undirected graphs. Computational Optimization and Applications 53, 649–680.

Instances	K	exact	SA	PBIL	DFSH-Post	Greedy	Greedy3d	Greedy4d	Best VNS	Best among all VNS	Best ILS	Best among all ILS	Genetic	CNA1	GRASP+PR
BA500	50	195	997	892	203	199	**195**	**195**	**195**	**195**	**195**	**195**	**195**	**195**	**195**
BA1000	75	558	3770	3057	580	559	559	559	559	559	559	559	**558**	**558**	**558**
BA2500	100	3704	31171	28044	4292	3726	3722	3722	**3704**	**3704**	3722	3722	**3704**	**3704**	**3704**
BA5000	150	10196	170998	146753	12273	10216	**10196**	**10196**	**10196**	**10196**	10242	10222	**10196**	**10196**	**10196**
ER235	50	295	7700	6700	1141	3011	315	313	**295**	**295**	324	313	**295**	297	297
ER466	80		48627	44255	19952	28994	1938	1993	1655	1542	1874	1874	1560	1548	1575
ER941	140		234479	229576	114166	116135	8106	8419	5326	5198	5724	5544	5120	5345	5482
ER2344	200		2011122	2009132	1606656	1395584	1118785	1112685	1059239	997839	1066164	1038048	1039254	1014430	1048464
FF250	50	194	1841	1386	302	217	199	197	**194**	**194**	212	195	**194**	**194**	**194**
FF500	110	257	2397	1904	344	293	262	264	259	**257**	261	261	**257**	**257**	**257**
FF1000	150	1260	92800	59594	1880	1414	1288	1271	1279	**1260**	1278	1276	**1260**	**1260**	1261
FF2000	200	4545	387248	256905	7432	5002	4647	4592	4551	4549	4583	4583	4546	4548	4554
WS250	70		14251	13786	16110	16110	11694	11401	7977	6610	3266	3241	3240	4465	9351
WS500	125		54201	53779	55163	69751	4818	11981	2130	2130	2282	2282	2199	2141	2209
WS1000	200		311700	308596	319600	319600	316416	318003	236279	139653	146172	115914	113638	171635	297241
WS1500	265		717369	703241	653015	761995	157621	243190	13792	13792	16357	14681	13662	14461	14177

Legend: bold font results represent the global optimum for the instance while yellow colour represents the best known heuristic result gathered so far.
Note that such results are obtained running the algorithms with different time limits on different computers.

Set 1: proposed in Ventresca in Ventresca, M., 2012. Global search algorithms using a combinatorial unranking-based problem representation for the critical node detection problem. Computers & Operations Research 39, 2763–2775.

Set 1 is available here: https://engineering.purdue.edu/~mventresca/cnd.zip
http://di.unito.it/cnp

results on set 2

Instances	K	Greedy3d	Greedy4d	Best VNS	Best ILS	Genetic
Bovine	**3**	268	268	268	268	268
Circuit	**25**	2099	2100	2101	2117	2099
E.coli	**15**	806	834	806	806	806
USAir97	**33**	4442	4726	5444	4442	4336
HumanDiseas	**52**	1115	1115	1115	1115	1115
TreniRoma	**26**	926	936	920	934	928
EU_flights	**119**	349927	350757	356631	355798	351610
openflights	**186**	29624	29552	31620	29416	28834
yeast	**202**	1416	1415	1421	1434	1414
Ham1000	**100**	338574	336866	332286	344509	328817
Ham2000	**200**	1372109	1367779	1309063	1417341	1315198
Ham3000a	**300**	3087215	3100938	3058656	3278172	3005183
Ham3000b	**300**	3096420	3100748	3121639	3250497	2993393
Ham3000c	**300**	3094459	3097451	3079570	3202002	2975213
Ham3000d	**300**	3090753	3100216	3027839	3237495	2988605
Ham3000e	**300**	3095793	3113514	3031975	3255390	3001078
Ham4000	**400**	5534254	5530402	5498097	5877896	5403572
Ham5000	**500**	8657681	8653358	8889904	9212984	8411789
powergrid	**494**	16373	16406	16099	16533	16254
Oclinks	**190**	614504	614546	623366	625671	620020
facebook	**404**	608487	856642	865115	420334	561111
grqc	**524**	13787	13825	13751	13817	13736
hepth	**988**	232021	326281	114933	123138	114382
hepph	**1201**	10305849	10162995	10989642	11759201	7336826
astroph	**1877**	54713053	54517114	65937108	65822942	58045178
condmat	**2313**	11771033	11758662	6121430	2298596	2612548

Legend: bold font results represent the global optimum for the instance while yellow colour represents the best known heuristic result gathered so far.
Note that such results are obtained running the algorithms with different time limits on different computers.

Set 2: proposed in (partially) Addis, B., Aringhieri, R., Grosso, A., Hosteins, P., 2016. Hybrid Constructive Heuristics for the Critical Node Problem. Annals of Operations Research 238 (1), 637–649

and in

Aringhieri, R., Grosso, A., Hosteins, P., Scatamacchia, R., 2016. A general evolutionary framework for different classes of critical node problems. Engineering Applications of Artificial Intelligence, 55:128-145.

Set 2 is available here: http://di.unito.it/cnp