

Table 1: Results of *MetaVC2*, *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *DIMACS-HARD* benchmarks. The VC^* column marked with an asterisk means that the minimum known vertex cover size has been proved optimal. For the *brock* instance family, each solver was evaluated with its optimized configuration trained on 2 instances (*brock400_4* and *brock400_4*). For other instances, each solver was evaluated with its optimized configuration trained on 1 instance (*MANN_a45*).

Graphs		<i>MetaVC2</i>		<i>MetaVC</i>		<i>NuMVC</i>		<i>TwMVC</i>		<i>FastVC2+p</i>	
Name	VC^*	suc rate	time	suc rate	time	suc rate	time	suc rate	time	suc rate	time
<i>brock400_4</i>	367*	100%	0.38	100%	0.41	100%	4.29	100%	3.36	100%	161.03
<i>brock800_4</i>	774*	100%	386.92	100%	537.74	56%	2336.36	30%	3102.01	1%	3579.29
<i>MANN_a45</i>	690*	100%	63.89	100%	57.08	100%	92.49	99%	524.86	0%	3600.00
brock400_2	371*	100%	5.71	100%	6.68	100%	177.56	100%	120.30	22%	3253.92
brock800_2	776*	72%	2057.69	67%	2317.45	2%	3557.66	5%	3517.54	0%	3600.00
C2000.9	1920	6%	3518.23	10%	3470.28	4%	3523.01	0%	3600.00	0%	3600.00
C4000.5	3982	100%	256.98	100%	219.04	100%	171.45	100%	195.64	76%	940.83
MANN_a81	2221	97%	1240.73	87%	1517.13	40%	2751.22	37%	2915.07	0%	3600.00

Table 2: Results of *MetaVC2*, *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *BHOSLIB-HARD* benchmark. Each instance in the *BHOSLIB-HARD* benchmark has a hidden optimal vertex cover, whose size is shown in the respective VC^* column and is marked with an asterisk. For all instances, each solver was evaluated with its optimized configuration trained on 5 instances in the topside part and indicated in *italic*.

Graphs		<i>MetaVC2</i>		<i>MetaVC</i>		<i>NuMVC</i>		<i>TwMVC</i>		<i>FastVC2+p</i>	
Name	VC^*	suc rate	time	suc rate	time	suc rate	time	suc rate	time	suc rate	time
<i>frb53-24-1</i>	1219*	94%	1178.64	92%	1357.84	92%	1480.43	82%	1722.53	9%	3448.58
<i>frb53-24-2</i>	1219*	100%	275.00	100%	264.69	100%	226.22	100%	410.92	60%	2352.37
<i>frb53-24-3</i>	1219*	100%	51.80	100%	64.29	100%	65.68	100%	81.37	100%	388.35
<i>frb53-24-4</i>	1219*	100%	336.46	100%	316.75	100%	425.73	100%	482.50	87%	1508.22
<i>frb53-24-5</i>	1219*	100%	46.09	100%	48.98	100%	52.47	100%	60.01	100%	333.02
frb56-25-1	1344*	100%	642.55	98%	871.65	99%	731.73	94%	1131.59	47%	2745.71
frb56-25-2	1344*	100%	906.41	95%	1005.04	95%	1159.36	94%	1401.79	16%	3333.33
frb56-25-3	1344*	100%	126.90	100%	140.65	100%	173.62	100%	178.85	57%	2343.79
frb56-25-4	1344*	100%	46.23	100%	57.10	100%	76.58	100%	68.98	100%	466.30
frb56-25-5	1344*	100%	34.20	100%	28.75	100%	39.80	100%	44.11	100%	197.27
frb59-26-1	1475*	95%	1228.96	85%	1436.38	90%	1557.70	79%	1870.86	1%	3597.38
frb59-26-2	1475*	52%	2454.14	45%	2747.71	37%	2926.69	35%	2938.82	0%	3600.00
frb59-26-3	1475*	99%	791.51	100%	753.39	96%	1025.92	99%	1020.74	39%	2727.73
frb59-26-4	1475*	91%	1509.60	92%	1187.73	86%	1666.28	66%	2226.29	36%	2843.16
frb59-26-5	1475*	100%	71.21	100%	68.90	100%	88.27	100%	142.36	100%	114.88

Table 3: Results of *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *REAL-WORLD-HARD* benchmark. For all instances, each solver was evaluated with its optimized configuration trained on 12 instances in the topside part and indicated in *italic*.

Graphs		<i>MetaVC</i>		<i>NuMVC</i>		<i>TwMVC</i>		<i>FastVC2+p</i>	
Name	<i>VC*</i>	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time
<i>inf-roadNet-PA</i>	555046	554530 (554582.20)	3535.97	560061 (560166.87)	1338.30	579584 (580311.25)	3599.62	555029 (555079.56)	460.39
<i>sc-msdoor</i>	381558	381558 (381558.00)	311.35	381559 (381563.60)	1530.07	381560 (381562.44)	3086.87	381558 (381558.40)	787.99
<i>sc-nasasrb</i>	51239	51239 (51240.90)	1188.29	51241 (51243.93)	2602.79	51238 (51244.95)	1477.46	51239 (51240.59)	788.41
<i>sc-pkustk13</i>	89217	89223 (89224.66)	1208.97	89216 (89217.58)	2773.71	89226 (89230.04)	623.05	89227 (89230.19)	350.75
<i>soc-livejournal</i>	1868903	1868907 (1868910.69)	2162.63	1875974 (1878644.78)	3599.57	N/A (N/A)	N/A	1868916 (1868918.17)	70.17
<i>socfb-CMU</i>	4986	4986 (4986.41)	688.20	4986 (4986.00)	441.86	4986 (4986.73)	462.51	4986 (4986.10)	775.75
<i>socfb-OR</i>	36547	36549 (36550.08)	1226.69	36555 (36558.88)	2038.75	36562 (36568.78)	2205.01	36547 (36548.33)	904.39
<i>socfb-UCLA</i>	15222	15222 (15223.60)	1067.07	15223 (15226.42)	1520.18	15227 (15230.47)	1907.70	15222 (15223.72)	808.39
<i>socfb-UConn</i>	13230	13230 (13231.67)	1189.18	13231 (13233.00)	1397.86	13233 (13236.05)	1834.57	13230 (13230.98)	725.68
<i>web-it-2004</i>	414507	414515 (414515.95)	1260.80	414699 (414718.73)	1552.27	414688 (414696.31)	3058.27	414524 (414527.02)	717.16
<i>web-webbase-2001</i>	2651	2652 (2652.00)	0.10	2651 (2651.87)	132.98	2652 (2652.00)	1.85	2652 (2652.00)	0.00
<i>web-wikipedia2009</i>	648294	648294 (648296.36)	1680.80	649192 (649246.29)	1831.47	N/A (N/A)	N/A	648302 (648312.56)	407.67
<i>inf-road-usa</i>	11527630	11527313 (11527749.68)	3569.33	12238416 (12238420.60)	29.25	N/A (N/A)	N/A	11527505 (11527723.35)	2706.00
<i>inf-roadNet-CA</i>	1001065	1000347 (1000500.03)	3492.74	1010709 (1013890.06)	3599.80	N/A (N/A)	N/A	1001052 (1001103.34)	888.15
<i>sc-lldoor</i>	856754	856754 (856754.00)	110.05	856798 (856808.74)	3533.05	856996 (857067.75)	3593.76	856754 (856754.01)	606.23
<i>sc-pwtk</i>	207673	207674 (207678.02)	2095.84	207724 (207736.31)	203.48	207688 (207702.96)	2359.07	207671 (207676.19)	2280.41
<i>sc-shipsec1</i>	117246	116922 (116945.75)	3472.12	117129 (117207.61)	3438.61	117332 (117371.38)	3178.57	117224 (117259.71)	3465.81
<i>sc-shipsec5</i>	147043	146912 (146967.64)	3495.28	147091 (147129.83)	3568.67	147055 (147091.11)	2573.51	147028 (147046.51)	3239.04
<i>soc-delicious</i>	85341	85368 (85382.47)	2894.37	85518 (85558.60)	3056.06	85474 (85528.86)	199.72	85336 (85340.26)	1232.35
<i>soc-orkut</i>	2171200	2171860 (2171951.40)	3563.37	N/A (N/A)	N/A	N/A (N/A)	N/A	N/A (N/A)	N/A
<i>soc-pokec</i>	843377	843364 (843374.87)	3288.76	844296 (844338.42)	1055.88	N/A (N/A)	N/A	843375 (843380.55)	1686.59
<i>socfb-Berkeley13</i>	17210	17210 (17212.98)	1122.34	17213 (17216.26)	1636.39	17218 (17221.00)	2020.29	17209 (17211.48)	716.95
<i>socfb-Indiana</i>	23314	23314 (23317.30)	1685.76	23317 (23323.67)	2272.78	23322 (23329.57)	1879.88	23313 (23315.78)	1358.08
<i>socfb-Penn94</i>	31161	31161 (31164.72)	1514.71	31168 (31178.93)	1970.55	31181 (31190.28)	1803.34	31159 (31162.35)	1362.67
<i>socfb-Texas84</i>	28165	28166 (28170.83)	1751.38	28170 (28175.56)	2518.91	28180 (28188.93)	1926.83	28166 (28167.54)	1251.17
<i>socfb-UCSB37</i>	11261	11261 (11262.08)	422.38	11261 (11262.74)	1147.20	11262 (11264.36)	1878.33	11261 (11261.56)	943.51
<i>socfb-UF</i>	27305	27305 (27308.52)	1855.44	27309 (27319.16)	2144.79	27321 (27326.52)	1978.55	27304 (27307.18)	1455.44
<i>socfb-Ullinois</i>	24091	24092 (24094.00)	1628.33	24096 (24103.25)	2059.37	24101 (24109.15)	2019.51	24090 (24092.46)	1468.54
<i>socfb-Wisconsin87</i>	18383	18383 (18384.89)	1564.20	18386 (18389.55)	1554.29	18390 (18394.67)	2099.69	18383 (18384.08)	797.49
<i>tech-RL-caida</i>	74593	74621 (74629.39)	2968.13	74691 (74741.37)	3488.23	74697 (74714.98)	1085.94	74626 (74631.21)	3180.03
<i>tech-as-skitter</i>	525163	525186 (525200.99)	3322.72	525924 (525957.09)	1054.60	526576 (526813.02)	3599.31	525247 (525260.18)	3367.72

Table 4: Results of *MetaVC2*, *MetaVC* and *FastVC2+p* on the *REAL-WORLD-HARD* benchmark. For all instances, each solver was evaluated with its optimized configuration trained on 12 instances in the topside part and indicated in *italic*.

Graphs		<i>MetaVC2</i>		<i>MetaVC</i>		<i>FastVC2+p</i>	
Name	<i>VC*</i>	min (avg)	time	min (avg)	time	min (avg)	time
<i>inf-roadNet-PA</i>	555046	554320 (554346.98)	3207.33	554530 (554582.20)	3535.97	555029 (555079.56)	460.39
<i>sc-msdoor</i>	381558	381558 (381558.00)	42.88	381558 (381558.00)	311.35	381558 (381558.40)	787.99
<i>sc-nasasrb</i>	51239	51238 (51240.06)	1056.52	51239 (51240.90)	1188.29	51239 (51240.59)	788.41
<i>sc-pkustk13</i>	89217	89232 (89234.12)	1195.98	89223 (89224.66)	1208.97	89227 (89230.19)	350.75
<i>soc-livejournal</i>	1868903	1868905 (1868910.32)	1330.85	1868907 (1868910.69)	2162.63	1868916 (1868918.17)	70.17
<i>socfb-CMU</i>	4986	4986 (4986.00)	8.64	4986 (4986.41)	688.20	4986 (4986.10)	775.75
<i>socfb-OR</i>	36547	36547 (36547.00)	340.18	36549 (36550.08)	1226.69	36547 (36548.33)	904.39
<i>socfb-UCLA</i>	15222	15221 (15222.41)	983.15	15222 (15223.60)	1067.07	15222 (15223.72)	808.39
<i>socfb-UConn</i>	13230	13230 (13230.03)	751.81	13230 (13231.67)	1189.18	13230 (13230.98)	725.68
<i>web-ir-2004</i>	414507	414515 (414516.06)	1024.03	414515 (414515.95)	1260.80	414524 (414527.02)	717.16
<i>web-webbase-2001</i>	2651	2652 (2652.00)	<0.01	2652 (2652.00)	0.10	2652 (2652.00)	<0.01
<i>web-wikipedia2009</i>	648294	648294 (648294.00)	228.54	648294 (648296.36)	1680.80	648302 (648312.56)	407.67
inf-road-usa	11527630	11525352 (11525847.64)	3496.00	11527313 (11527749.68)	3569.33	11527505 (11527723.35)	2706.00
inf-roadNet-CA	1001065	999854 (999911.64)	3380.57	1000347 (1000500.03)	3492.74	1001052 (1001103.34)	888.15
sc-lldoor	856754	856754 (856754.00)	15.62	856754 (856754.00)	110.05	856754 (856754.01)	606.23
sc-pwtk	207673	207674 (207676.66)	1183.57	207674 (207678.02)	2095.84	207671 (207676.19)	2280.41
sc-shipsec1	117246	116849 (116871.15)	3129.61	116922 (116945.75)	3472.12	117224 (117259.71)	3465.81
sc-shipsec5	147043	146768 (146787.57)	3366.05	146912 (146967.64)	3495.28	147028 (147046.51)	3239.04
soc-delicious	85341	85358 (85372.75)	2801.96	85368 (85382.47)	2894.37	85336 (85340.26)	1232.35
soc-orkut	2171200	2170773 (2170854.66)	3350.66	2171860 (2171951.40)	3563.37	N/A (N/A)	N/A
soc-pokec	843377	843348 (843355.56)	3223.25	843364 (843374.87)	3288.76	843375 (843380.55)	1686.59
socfb-Berkeley13	17210	17209 (17209.91)	774.61	17210 (17212.98)	1122.34	17209 (17211.48)	716.95
socfb-Indiana	23314	23313 (23313.97)	926.32	23314 (23317.30)	1685.76	23313 (23315.78)	1358.08
socfb-Penn94	31161	31158 (31159.82)	1201.90	31161 (31164.72)	1514.71	31159 (31162.35)	1362.67
socfb-Texas84	28165	28164 (28165.60)	908.47	28166 (28170.83)	1751.38	28166 (28167.54)	1251.17
socfb-UCSB37	11261	11261 (11261.00)	52.98	11261 (11262.08)	422.38	11261 (11261.56)	943.51
socfb-UF	27305	27303 (27303.90)	1046.48	27305 (27308.52)	1855.44	27304 (27307.18)	1455.44
socfb-Uillinois	24091	24089 (24090.48)	1228.43	24092 (24094.00)	1628.33	24090 (24092.46)	1468.54
socfb-Wisconsin87	18383	18382 (18382.93)	352.19	18383 (18384.89)	1564.20	18383 (18384.08)	797.49
tech-RL-caida	74593	74621 (74630.29)	2758.99	74621 (74629.39)	2968.13	74626 (74631.21)	3180.03
tech-as-skitter	525163	525183 (525196.02)	2737.99	525186 (525200.99)	3322.72	525247 (525260.18)	3367.72