Table 1: Results of *MetaVC2*, *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *DIMACS-EASY* benchmark. The VC^* column marked with an asterisk means that the minimum known vertex cover size has been proved optimal.

Graphs		MetaVC2		MetaVC		NuMVC		TwMVC		FastVC2+p	
Instance	VC^*	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time
brock200_2	188*	188 (188.00)	<0.01	188 (188.00)	0.08	188 (188.00)	0.62	188 (188.00)	0.13	188 (188.00)	6.27
brock200_4	183*	183 (183.00)	0.09	183 (183.00)	0.30	183 (183.00)	5.40	183 (183.00)	0.71	183 (183.00)	104.13
C1000.9	932	932 (932.00)	1.73	932 (932.00)	1.91	932 (932.00)	1.70	932 (932.00)	2.97	932 (932.76)	525.89
C125.9	91*	91 (91.00)	<0.01	91 (91.00)	<0.01	91 (91.00)	<0.01	91 (91.00)	<0.01	91 (91.00)	<0.01
C2000.5	1984	1984 (1984.00)	3.27	1984 (1984.00)	2.76	1984 (1984.00)	2.02	1984 (1984.00)	2.66	1984 (1984.00)	0.85
C250.9	206*	206 (206.00)	<0.01	206 (206.00)	<0.01	206 (206.00)	<0.01	206 (206.00)	<0.01	206 (206.15)	115.84
C500.9	443*	443 (443.00)	0.04	443 (443.00)	0.07	443 (443.00)	0.07	443 (443.00)	0.17	443 (444.14)	355.27
DSJC1000.5	985*	985 (985.00)	0.59	985 (985.00)	0.60	985 (985.00)	0.58	985 (985.00)	0.59	985 (985.00)	0.94
DSJC500.5	487*	487 (487.00)	0.01	487 (487.00)	<0.01	487 (487.00)	<0.01	487 (487.00)	<0.01	487 (487.00)	0.08
MANN_a27	252*	252 (252.00)	<0.01	252 (252.00)	<0.01	252 (252.00)	<0.01	252 (252.00)	<0.01	252 (252.00)	0.41
gen200_p0.9_44	156*	156 (156.00)	<0.01	156 (156.00)	<0.01	156 (156.00)	<0.01	156 (156.00)	<0.01	156 (160.67)	179.96
gen200_p0.9_55	145*	145 (145.00)	<0.01	145 (145.00)	<0.01	145 (145.00)	<0.01	145 (145.00)	<0.01	145 (145.44)	156.78
gen400_p0.9_55	345*	345 (345.00)	<0.01	345 (345.00)	<0.01	345 (345.00)	<0.01	345 (345.00)	0.03	345 (347.41)	569.97
gen400_p0.9_65	335*	335 (335.00)	<0.01	335 (335.00)	<0.01	335 (335.00)	<0.01	335 (335.00)	<0.01	335 (338.81)	409.83
gen400_p0.9_75	325*	325 (325.00)	<0.01	325 (325.00)	<0.01	325 (325.00)	<0.01	325 (325.00)	<0.01	325 (330.62)	125.85
hamming10-4	984*	984 (984.00)	0.02	984 (984.00)	0.03	984 (984.00)	0.05	984 (984.00)	0.06	984 (985.44)	27.40
hamming8-4	240*	240 (240.00)	<0.01	240 (240.00)	<0.01	240 (240.00)	<0.01	240 (240.00)	<0.01	240 (240.00)	<0.01
keller4	160*	160 (160.00)	<0.01	160 (160.00)	<0.01	160 (160.00)	<0.01	160 (160.00)	<0.01	160 (160.30)	<0.01
keller5	749*	749 (749.00)	0.04	749 (749.00)	0.02	749 (749.00)	0.01	749 (749.00)	0.03	749 (751.28)	574.83
keller6	3302	3302 (3302.00)	3.03	3302 (3302.00)	3.19	3302 (3302.00)	3.72	3302 (3302.00)	3.98	3302 (3302.26)	445.06
p_hat1500-1	1488*	1488 (1488.00)	4.13	1488 (1488.00)	4.59	1488 (1488.00)	4.09	1488 (1488.00)	4.32	1488 (1488.20)	4.39
p_hat1500-2	1435*	1435 (1435.00)	0.17	1435 (1435.00)	0.15	1435 (1435.00)	0.12	1435 (1435.00)	0.13	1435 (1435.00)	0.25
p_hat1500-3	1406	1406 (1406.00)	0.05	1406 (1406.00)	0.08	1406 (1406.00)	0.06	1406 (1406.00)	0.08	1406 (1406.00)	1.50
p_hat300-1	292*	292 (292.00)	<0.01	292 (292.00)	<0.01	292 (292.00)	<0.01	292 (292.00)	<0.01	292 (292.00)	<0.01
p_hat300-2	275*	275 (275.00)	<0.01	275 (275.00)	<0.01	275 (275.00)	<0.01	275 (275.00)	<0.01	275 (275.00)	<0.01
p_hat300-3	264*	264 (264.00)	<0.01	264 (264.00)	<0.01	264 (264.00)	<0.01	264 (264.00)	<0.01	264 (264.65)	15.10
p_hat700-1	689*	689 (689.00)	0.05	689 (689.00)	0.03	689 (689.00)	0.01	689 (689.00)	0.01	689 (689.00)	0.14
p_hat700-2	656*	656 (656.00)	<0.01	656 (656.00)	0.01	656 (656.00)	<0.01	656 (656.00)	<0.01	656 (656.00)	0.01
p_hat700-3	638*	638 (638.00)	<0.01	638 (638.00)	<0.01	638 (638.00)	<0.01	638 (638.00)	<0.01	638 (638.00)	0.01

Table 2: Results of *MetaVC2*, *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *BHOSLIB-EASY* benchmark. Each instance in the *BHOSLIB-EASY* benchmark has a hidden optimal vertex cover, whose size is shown in the respective VC^* column and is marked with an asterisk.

Graphs		MetaVC2		MetaVC		NuMVC		TwMVC		FastVC2+p	
Instance	VC^*	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time
frb30-15-1	420*	420 (420.00)	<0.01	420 (420.00)	0.01	420 (420.00)	<0.01	420 (420.00)	0.03	420 (420.00)	1.31
frb30-15-2	420*	420 (420.00)	<0.01	420 (420.00)	0.02	420 (420.00)	0.01	420 (420.00)	0.04	420 (420.00)	0.85
frb30-15-3	420*	420 (420.00)	0.06	420 (420.00)	0.14	420 (420.00)	0.11	420 (420.00)	0.24	420 (420.00)	42.60
frb30-15-4	420*	420 (420.00)	<0.01	420 (420.00)	0.01	420 (420.00)	0.01	420 (420.00)	0.04	420 (420.00)	0.88
frb30-15-5	420*	420 (420.00)	0.02	420 (420.00)	0.08	420 (420.00)	0.05	420 (420.00)	0.12	420 (420.00)	11.71
frb35-17-1	560*	560 (560.00)	0.30	560 (560.00)	0.41	560 (560.00)	0.35	560 (560.00)	0.66	560 (560.00)	23.68
frb35-17-2	560*	560 (560.00)	0.38	560 (560.00)	0.50	560 (560.00)	0.44	560 (560.00)	0.66	560 (560.00)	8.84
frb35-17-3	560*	560 (560.00)	0.05	560 (560.00)	0.12	560 (560.00)	0.06	560 (560.00)	0.18	560 (560.00)	9.18
frb35-17-4	560*	560 (560.00)	0.40	560 (560.00)	0.42	560 (560.00)	0.45	560 (560.00)	0.58	560 (560.57)	608.07
frb35-17-5	560*	560 (560.00)	0.12	560 (560.00)	0.25	560 (560.00)	0.20	560 (560.00)	0.35	560 (560.00)	9.35
frb40-19-1	720*	720 (720.00)	0.23	720 (720.00)	0.29	720 (720.00)	0.22	720 (720.00)	0.49	720 (720.00)	6.67
frb40-19-2	720*	720 (720.00)	4.93	720 (720.00)	4.87	720 (720.00)	5.73	720 (720.00)	6.77	720 (720.00)	55.02
frb40-19-3	720*	720 (720.00)	1.07	720 (720.00)	1.27	720 (720.00)	1.21	720 (720.00)	1.57	720 (720.00)	19.35
frb40-19-4	720*	720 (720.00)	3.02	720 (720.00)	3.75	720 (720.00)	3.43	720 (720.00)	5.24	720 (720.00)	24.46
frb40-19-5	720*	720 (720.00)	12.24	720 (720.00)	13.01	720 (720.00)	16.57	720 (720.00)	17.13	720 (720.00)	239.35
frb45-21-1	900*	900 (900.00)	3.21	900 (900.00)	4.47	900 (900.00)	4.25	900 (900.00)	5.63	900 (900.00)	17.24
frb45-21-2	900*	900 (900.00)	5.04	900 (900.00)	6.10	900 (900.00)	6.18	900 (900.00)	9.41	900 (900.00)	43.58
frb45-21-3	900*	900 (900.00)	19.46	900 (900.00)	18.10	900 (900.00)	21.11	900 (900.00)	27.29	900 (900.00)	281.05
frb45-21-4	900*	900 (900.00)	4.32	900 (900.00)	4.46	900 (900.00)	5.68	900 (900.00)	8.25	900 (900.00)	45.26
frb45-21-5	900*	900 (900.00)	10.42	900 (900.00)	10.97	900 (900.00)	12.84	900 (900.00)	13.53	900 (900.00)	174.63
frb50-23-1	1100*	1100 (1100.00)	34.48	1100 (1100.00)	46.28	1100 (1100.00)	39.59	1100 (1100.00)	58.78	1100 (1100.00)	271.10
frb50-23-2	1100*	1100 (1100.00)	213.64	1100 (1100.00)	240.27	1100 (1100.00)	261.44	1100 (1100.00)	439.32	1100 (1100.03)	882.41
frb50-23-3	1100*	1100 (1100.00)	730.02	1100 (1100.01)	799.52	1100 (1100.02)	705.00	1100 (1100.05)	768.08	1100 (1100.81)	355.21
frb50-23-4	1100*	1100 (1100.00)	8.65	1100 (1100.00)	9.40	1100 (1100.00)	10.28	1100 (1100.00)	14.74	1100 (1100.00)	20.54
frb50-23-5	1100*	1100 (1100.00)	26.60	1100 (1100.00)	23.54	1100 (1100.00)	25.28	1100 (1100.00)	41.76	1100 (1100.00)	63.37

Table 3: Results of *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *REAL-WORLD-EASY* benchmark (Part 1).

Graphs		MetaVC		NuMVC		TwMVC		FastVC2+p	
Instance	VC*	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time
bio-celegans	249	249 (249.00)	<0.01	249 (249.00)	<0.01	249 (249.00)	<0.01	249 (249.00)	<0.01
bio-diseasome	285	285 (285.00)	<0.01	285 (285.00)	<0.01	285 (285.00)	<0.01	285 (285.00)	<0.01
bio-dmela	2630	2630 (2630.00)	<0.01	2630 (2630.00)	1.97	2632 (2632.37)	0.21	2630 (2630.00)	0.47
bio-yeast	456	456 (456.00)	<0.01	456 (456.00)	<0.01	456 (456.00)	<0.01	456 (456.00)	<0.01
ca-AstroPh	11483	11483 (11483.00)	0.09	11483 (11483.00)	55.65	11483 (11483.00)	1.81	11483 (11483.00)	0.09
ca-CSphd	550	550 (550.00)	<0.01	550 (550.00)	<0.01	550 (550.00)	<0.01	550 (550.00)	<0.01
ca-CondMat	12480	12480 (12480.00)	0.02	12480 (12480.00)	56.55	12480 (12480.00)	2.70	12480 (12480.00)	<0.01
ca-Erdos992	461	461 (461.00)	<0.01	461 (461.00)	<0.01	461 (461.00)	<0.01	461 (461.00)	<0.01
ca-GrQc	2208	2208 (2208.00)	<0.01	2208 (2208.00)	0.46	2208 (2208.00)	0.03	2208 (2208.00)	<0.01
ca-HepPh	6555	6555 (6555.00)	0.01	6555 (6555.00)	16.13	6555 (6555.00)	0.66	6555 (6555.00)	0.01
ca-MathSciNet	139951	139951 (139951.00)	0.45	139975 (139987.60)	59.67	139951 (139951.37)	1281.03	139951 (139951.00)	0.46
ca-citeseer	129193	129193 (129193.00)	0.34	129193 (129194.75)	76.02	129193 (129193.05)	407.00	129193 (129193.00)	0.35
ca-coauthors-dblp	472179	472179 (472179.00)	8.15	472180 (472182.15)	1987.15	472179 (472179.54)	3054.64	472179 (472179.00)	8.38
ca-dblp-2010	121969	121969 (121969.00)	0.27	121969 (121970.30)	74.07	121969 (121969.37)	854.36	121969 (121969.00)	0.28
ca-dblp-2012	164949	164949 (164949.00)	0.48	164950 (164954.53)	111.78	164949 (164949.07)	853.40	164949 (164949.00)	0.51
ca-hollywood-2009	864052	864052 (864052.00)	65.40	864061 (864067.91)	3546.89	864176 (864197.36)	3544.71	864052 (864052.00)	64.07
ca-netscience	214	214 (214.00)	<0.01	214 (214.00)	<0.01	214 (214.00)	<0.01	214 (214.00)	<0.01
ia-email-EU	820	820 (820.00)	0.01	820 (820.00)	<0.01	820 (820.00)	0.01	820 (820.00)	<0.01
ia-email-univ	594	594 (594.00)	<0.01	594 (594.00)	<0.01	594 (594.04)	11.49	594 (594.00)	<0.01
ia-enron-large	12781	12781 (12781.00)	0.03	12781 (12781.00)	126.42	12781 (12781.00)	3.46	12781 (12781.00)	0.02
ia-enron-only	86	86 (86.00)	<0.01	86 (86.00)	<0.01	86 (86.00)	<0.01	86 (86.00)	<0.01
ia-fb-messages	578	578 (578.00)	<0.01	578 (578.00)	<0.01	578 (578.00)	<0.01	578 (578.00)	<0.01
ia-infect-dublin	293	293 (293.00)	<0.01	293 (293.00)	<0.01	293 (293.01)	<0.01	293 (293.00)	<0.01
ia-infect-hyper	90	90 (90.00)	<0.01	90 (90.00)	<0.01	90 (90.00)	<0.01	90 (90.00)	<0.01
ia-reality	81	81 (81.00)	<0.01	81 (81.00)	<0.01	81 (81.00)	<0.01	81 (81.00)	<0.01
ia-wiki-Talk	17288	17288 (17288.00)	0.09	17288 (17288.03)	1216.51	17288 (17288.00)	8.57	17288 (17288.00)	0.09
inf-power	2203	2203 (2203.00)	<0.01	2203 (2203.00)	1.95	2203 (2203.00)	0.26	2203 (2203.00)	<0.01
rec-amazon	47605	47605 (47605.00)	0.17	47641 (47661.05)	3474.00	47605 (47605.90)	283.29	47605 (47605.00)	0.02
rt-retweet	32	32 (32.00)	<0.01	32 (32.00)	<0.01	32 (32.00)	<0.01	32 (32.00)	<0.01
rt-retweet-crawl	81040	81040 (81040.00)	1.38	81045 (81048.65)	138.66	81043 (81048.05)	180.46	81040 (81040.00)	1.47
rt-twitter-copen	237	237 (237.00)	<0.01	237 (237.00)	<0.01	237 (237.00)	<0.01	237 (237.00)	<0.01
sc-pkustk11	83911	83911 (83911.00)	42.84	83911 (83911.00)	854.13	83911 (83913.54)	290.69	83911 (83911.00)	3.75
scc_enron-only	138	138 (138.00)	<0.01	138 (138.00)	<0.01	138 (138.00)	<0.01	138 (138.00)	<0.01
scc_fb-forum	372	372 (372.00)	0.01	372 (372.00)	<0.01	372 (372.00)	<0.01	372 (372.00)	0.01
scc_fb-messages	1072	1072 (1072.00)	0.81	1072 (1072.00)	0.10	1072 (1072.00)	0.08	1072 (1072.00)	0.83
scc_infect-dublin	9103	9103 (9103.00)	0.04	9103 (9103.00)	2.21	9103 (9103.00)	0.76	9103 (9103.00)	0.05
scc_infect-hyper	110	110 (110.00)	<0.01	110 (110.00)	<0.01	110 (110.00)	<0.01	110 (110.00)	<0.01
scc_reality	2486	2486 (2486.00)	14.24	2486 (2486.00)	1.50	2486 (2486.00)	1.40	2486 (2486.00)	15.75
scc_retweet	560	560 (560.00)	0.01	560 (560.00)	<0.01	560 (560.00)	0.01	560 (560.00)	0.01
scc_retweet-crawl	8419	8419 (8419.00)	0.01	8419 (8419.00)	227.50	8419 (8419.41)	36.88	8419 (8419.00)	0.01
scc_rt_alwefaq	35	35 (35.00)	<0.01	35 (35.00)	<0.01	35 (35.00)	<0.01	35 (35.00)	<0.01
scc_rt_assad	16	16 (16.00)	<0.01	16 (16.00)	<0.01	16 (16.00)	<0.01	16 (16.00)	<0.01
scc_rt_bahrain	37	37 (37.00)	<0.01	37 (37.00)	<0.01	37 (37.00)	<0.01	37 (37.00)	<0.01
scc_rt_barackobama	29	29 (29.00)	<0.01	29 (29.00)	<0.01	29 (29.00)	<0.01	29 (29.00)	<0.01
scc_rt_damascus	15	15 (15.00)	<0.01	15 (15.00)	<0.01	15 (15.00)	<0.01	15 (15.00)	<0.01
scc_rt_dash	15	15 (15.00)	<0.01	15 (15.00)	<0.01	15 (15.00)	<0.01	15 (15.00)	<0.01
scc_rt_gmanews	46	46 (46.00)	<0.01	46 (46.00)	<0.01	46 (46.00)	<0.01	46 (46.00)	<0.01
scc_rt_gop	6	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01
scc_rt_http	2	2 (2.00)	<0.01	2 (2.00)	<0.01	2 (2.00)	<0.01	2 (2.00)	<0.01
scc_rt_israel	11	11 (11.00)	<0.01	11 (11.00)	<0.01	11 (11.00)	<0.01	11 (11.00)	<0.01
scc_rt_justinbieber	26	26 (26.00)	<0.01	26 (26.00)	<0.01	26 (26.00)	<0.01	26 (26.00)	<0.01
scc_rt_ksa	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_lebanon	5	5 (5.00)	<0.01	5 (5.00)	<0.01	5 (5.00)	<0.01	5 (5.00)	<0.01
scc_rt_libya	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_lolgop	103	103 (103.00)	<0.01	103 (103.00)	<0.01	103 (103.00)	<0.01	103 (103.00)	<0.01
scc_rt_mittromney	42	42 (42.00)	<0.01	42 (42.00)	<0.01	42 (42.00)	<0.01	42 (42.00)	<0.01
scc_rt_obama	4	4 (4.00)	<0.01	4 (4.00)	<0.01	4 (4.00)	<0.01	4 (4.00)	<0.01
scc_rt_occupy	22	22 (22.00)	<0.01	22 (22.00)	<0.01	22 (22.00)	<0.01	22 (22.00)	<0.01
scc_rt_occupywallstnyc	45	45 (45.00)	<0.01	45 (45.00)	<0.01	45 (45.00)	<0.01	45 (45.00)	<0.01
scc_rt_oman	6	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01
scc_rt_onedirection	29	29 (29.00)	<0.01	29 (29.00)	<0.01	29 (29.00)	<0.01	29 (29.00)	<0.01

Table 4: Results of *MetaVC*, *NuMVC*, *TwMVC* and *FastVC2+p* on the *REAL-WORLD-EASY* benchmark (Part 2).

Graphs		MetaVC		NuMVC		TwMVC		FastVC2+p	
Instance	VC^*	min (avg)	time	min (avg)	time	min (avg)	time	min (avg)	time
scc_rt_p2	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_qatif	5	5 (5.00)	<0.01	5 (5.00)	<0.01	5 (5.00)	<0.01	5 (5.00)	<0.01
scc_rt_saudi	17	17 (17.00)	<0.01	17 (17.00)	<0.01	17 (17.00)	<0.01	17 (17.00)	<0.01
scc_rt_tcot	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_tlot	6	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01
scc_rt_uae	8	8 (8.00)	<0.01	8 (8.00)	<0.01	8 (8.00)	<0.01	8 (8.00)	<0.01
scc_rt_voteonedirection	4	4 (4.00)	<0.01	4 (4.00)	<0.01	4 (4.00)	<0.01	4 (4.00)	<0.01
scc_twitter-copen	1326	1326 (1326.00)	0.26	1326 (1326.00)	0.10	1326 (1326.00)	0.09	1326 (1326.00)	0.22
soc-BlogCatalog	20752	20752 (20752.00)	0.87	20752 (20752.00)	795.13	20752 (20752.01)	1463.72	20752 (20752.00)	0.90
soc-FourSquare	90108	90108 (90108.00)	2.82	90118 (90126.08)	3271.27	90130 (90138.13)	98.23	90108 (90108.00)	3.03
soc-LiveMocha	43427	43427 (43427.00)	0.97	43428 (43430.57)	2078.89	43436 (43444.88)	2539.35	43427 (43427.00)	0.98
soc-brightkite	21190	21190 (21190.00)	0.05	21190 (21190.39)	2457.19	21190 (21190.31)	17.93	21190 (21190.00)	0.04
soc-buzznet	30613	30613 (30613.00)	2.70	30613 (30613.01)	1594.55	30614 (30617.21)	2425.03	30613 (30613.00)	1.10
soc-digg	103234	103234 (103234.00)	3.42	103301 (103316.19)	3200.25	103303 (103323.63)	193.59	103234 (103234.00)	3.85
soc-dolphins	34	34 (34.00)	<0.01	34 (34.00)	<0.01	34 (34.00)	<0.01	34 (34.00)	<0.01
soc-douban	8685	8685 (8685.00)	0.09	8685 (8685.00)	0.14	8685 (8685.00)	1.88	8685 (8685.00)	0.07
soc-epinions	9757	9757 (9757.00)	0.01	9757 (9757.00)	199.21	9757 (9757.13)	4.17	9757 (9757.00)	0.01
soc-flickr	153271	153271 (153271.00)	2.01	153335 (153346.50)	44.43	153271 (153271.58)	2063.48	153271 (153271.00)	9.04
soc-flixster	96317	96317 (96317.00)	4.34	96317 (96319.04)	1245.14	96319 (96321.43)	328.11	96317 (96317.00)	4.69
soc-gowalla	84222	84222 (84222.00)	0.46	84287 (84305.67)	3447.25	84222 (84223.11)	1789.11	84222 (84222.00)	4.39
soc-karate	14	14 (14.00)	<0.01	14 (14.00)	<0.01	14 (14.05)	<0.01	14 (14.00)	<0.01
soc-lastfm	78688	78688 (78688.00)	2.60	78688 (78691.55)	2707.44	78691 (78695.54)	155.97	78688 (78688.00)	2.49
soc-slashdot	22373	22373 (22373.00)	0.09	22373 (22373.47)	2456.51	22373 (22373.00)	17.25	22373 (22373.00)	0.10
soc-twitter-follows	2323	2323 (2323.00)	0.49	2323 (2323.00)	0.46	2323 (2323.00)	1.42	2323 (2323.00)	0.52
soc-wiki-Vote	406	406 (406.00)	<0.01	406 (406.00)	<0.01	406 (406.00)	<0.01	406 (406.00)	<0.01
soc-youtube	146376	146376 (146376.00)	0.95	146446 (146459.17)	55.92	146376 (146376.76)	1721.36	146376 (146376.00)	1.01
soc-youtube-snap	276945	276945 (276945.00)	1.50	277001 (277016.27)	338.12	276945 (276949.36)	3147.94	276945 (276945.00)	1.67
socfb-A-anon	375230	375230 (375230.00)	14.62	375232 (375233.39)	74.79	375231 (375233.67)	2401.53	375230 (375230.00)	15.23
socfb-B-anon	303048	303048 (303048.00)	13.15	303048 (303048.85)	52.13	303048 (303048.78)	1699.20	303048 (303048.00)	13.91
socfb-Duke14	7683	7683 (7683.00)	655.01	7683 (7683.41)	704.06	7683 (7683.99)	180.95	7683 (7683.00)	112.13
socfb-MIT	4657	4657 (4657.00)	103.19	4657 (4657.00)	13.24	4657 (4657.12)	1167.81	4657 (4657.00)	7.62
socfb-Stanford3	8517	8518 (8518.00)	10.33	8518 (8518.00)	13.31	8518 (8518.00)	57.73	8518 (8518.00)	2.72
tech-WHOIS	2284	2284 (2284.00)	<0.01	2284 (2284.00)	0.33	2284 (2284.00)	0.07	2284 (2284.00)	<0.01
tech-as-caida2007	3683	3683 (3683.00)	<0.01	3683 (3683.00)	0.01	3683 (3683.00)	0.29	3683 (3683.00)	<0.01
tech-internet-as	5700	5700 (5700.00)	0.01	5700 (5700.00)	31.52	5700 (5700.00)	0.94	5700 (5700.00)	<0.01
tech-p2p-gnutella	15682	15682 (15682.00)	0.02	15682 (15682.00)	40.11	15682 (15682.16)	235.27	15682 (15682.00)	0.01
tech-routers-rf	795	795 (795.00)	<0.01	795 (795.00)	<0.01	795 (795.00)	<0.01	795 (795.00)	<0.01
web-BerkStan	5384	5384 (5384.00)	<0.01	5384 (5384.00)	17.45	5384 (5384.00)	173.32	5384 (5384.00)	<0.01
web-arabic-2005	114420	114420 (114420.00)	0.83	114460 (114466.82)	92.04	114432 (114436.78)	2353.57	114420 (114420.00)	0.60
web-edu	1451	1451 (1451.00)	<0.01	1451 (1451.00)	0.54	1451 (1451.00)	0.01	1451 (1451.00)	<0.01
web-google	498	498 (498.00)	<0.01	498 (498.00)	<0.01	498 (498.00)	<0.01	498 (498.00)	<0.01
web-indochina-2004	7300	7300 (7300.00)	<0.01	7300 (7300.00)	27.59	7300 (7300.00)	1.96	7300 (7300.00)	<0.01
web-polblogs	244	244 (244.00)	<0.01	244 (244.00)	<0.01	244 (244.00)	<0.01	244 (244.00)	<0.01
web-sk-2005	58173	58173 (58173.00)	61.99	58190 (58198.54)	2747.13	58173 (58174.81)	652.35	58173 (58173.00)	1.95
web-spam	2297	2297 (2297.00)	<0.01	2297 (2297.00)	0.56	2297 (2297.04)	0.08	2297 (2297.00)	<0.01
web-uk-2005	127774	127774 (127774.00)	8.98	127774 (127774.00)	4.35	127774 (127774.00)	59.85	127774 (127774.00)	8.90

Table 5: Results of *MetaVC2*, *MetaVC*, and *FastVC2+p* on the *REAL-WORLD-EASY* benchmark (Part 1).

Graphs		MetaVC2		MetaVC		FastVC2+p	
Instance	VC*	min (avg)	time	min (avg)	time	min (avg)	time
bio-celegans	249	249 (249.00)	<0.01	249 (249.00)	<0.01	249 (249.00)	<0.01
bio-diseasome	285	285 (285.00)	<0.01	285 (285.00)	<0.01	285 (285.00)	<0.01
bio-dmela	2630	2630 (2630.00)	<0.01	2630 (2630.00)	<0.01	2630 (2630.00)	0.47
bio-yeast	456	456 (456.00)	<0.01	456 (456.00)	<0.01	456 (456.00)	<0.01
ca-AstroPh	11483	11483 (11483.00)	0.09	11483 (11483.00)	0.09	11483 (11483.00)	0.09
ca-CSphd	550	550 (550.00)	<0.01	550 (550.00)	<0.01	550 (550.00)	<0.01
ca-CondMat	12480	12480 (12480.00)	0.02	12480 (12480.00)	0.02	12480 (12480.00)	<0.01
ca-Erdos992	461	461 (461.00)	<0.01	461 (461.00)	<0.01	461 (461.00)	<0.01
ca-GrQc	2208	2208 (2208.00)	<0.01	2208 (2208.00)	<0.01	2208 (2208.00)	<0.01
ca-HepPh	6555	6555 (6555.00)	0.01	6555 (6555.00)	0.01	6555 (6555.00)	0.01
ca-MathSciNet	139951	139951 (139951.00)	0.42	139951 (139951.00)	0.45	139951 (139951.00)	0.46
ca-citeseer	129193	129193 (129193.00)	0.33	129193 (129193.00)	0.34	129193 (129193.00)	0.35
ca-coauthors-dblp	472179	472179 (472179.00)	8.17	472179 (472179.00)	8.15	472179 (472179.00)	8.38
ca-dblp-2010	121969	121969 (121969.00)	0.28	121969 (121969.00)	0.27	121969 (121969.00)	0.28
ca-dblp-2012	164949	164949 (164949.00)	0.49	164949 (164949.00)	0.48	164949 (164949.00)	0.51
ca-hollywood-2009	864052	864052 (864052.00)	66.66	864052 (864052.00)	65.40	864052 (864052.00)	64.07
ca-netscience	214	214 (214.00)	<0.01	214 (214.00)	<0.01	214 (214.00)	<0.01
ia-email-EU	820	820 (820.00)	0.01	820 (820.00)	0.01	820 (820.00)	<0.01
ia-email-univ	594	594 (594.00)	<0.01	594 (594.00)	<0.01	594 (594.00)	<0.01
ia-enron-large	12781	12781 (12781.00)	0.02	12781 (12781.00)	0.03	12781 (12781.00)	0.02
ia-enron-only	86	86 (86.00)	<0.01	86 (86.00)	<0.01	86 (86.00)	<0.01
ia-fb-messages	578	578 (578.00)	<0.01	578 (578.00)	<0.01	578 (578.00)	<0.01
ia-infect-dublin	293	293 (293.00)	<0.01	293 (293.00)	<0.01	293 (293.00)	<0.01
ia-infect-hyper	90	90 (90.00)	<0.01	90 (90.00)	<0.01	90 (90.00)	<0.01
ia-reality	81	81 (81.00)	<0.01	81 (81.00)	<0.01	81 (81.00)	<0.01
ia-wiki-Talk	17288	17288 (17288.00)	0.09	17288 (17288.00)	0.09	17288 (17288.00)	0.09
inf-power	2203	2203 (2203.00)	<0.01	2203 (2203.00)	<0.01	2203 (2203.00)	<0.01
rec-amazon	47605	47605 (47605.00)	0.16	47605 (47605.00)	0.17	47605 (47605.00)	0.02
rt-retweet	32	32 (32.00)	<0.01	32 (32.00)	<0.01	32 (32.00)	<0.01
rt-retweet-crawl	81040	81040 (81040.00)	1.47	81040 (81040.00)	1.38	81040 (81040.00)	1.47
rt-twitter-copen	237	237 (237.00)	<0.01	237 (237.00)	<0.01	237 (237.00)	<0.01
sc-pkustk11	83911	83911 (83911.00)	2.30	83911 (83911.00)	42.84	83911 (83911.00)	3.75
scc_enron-only	138	138 (138.00)	<0.01	138 (138.00)	<0.01	138 (138.00)	<0.01
scc_fb-forum	372	372 (372.00)	0.02	372 (372.00)	0.01	372 (372.00)	0.01
scc_fb-messages	1072	1072 (1072.00)	0.83	1072 (1072.00)	0.81	1072 (1072.00)	0.83
scc_infect-dublin	9103	9103 (9103.00)	0.04	9103 (9103.00)	0.04	9103 (9103.00)	0.05
scc_infect-hyper	110	110 (110.00)	<0.01	110 (110.00)	<0.01	110 (110.00)	<0.01
scc_reality	2486	2486 (2486.00)	14.63	2486 (2486.00)	14.24	2486 (2486.00)	15.75
scc_retweet	560	560 (560.00)	0.01	560 (560.00)	0.01	560 (560.00)	0.01
scc_retweet-crawl	8419	8419 (8419.00)	0.01	8419 (8419.00)	0.01	8419 (8419.00)	0.01
scc_rt_alwefaq	35	35 (35.00)	<0.01	35 (35.00)	<0.01	35 (35.00)	<0.01
scc_rt_assad	16	16 (16.00)	<0.01	16 (16.00)	<0.01	16 (16.00)	<0.01
scc_rt_bahrain	37	37 (37.00)	<0.01	37 (37.00)	<0.01	37 (37.00)	<0.01
scc_rt_barackobama	29	29 (29.00)	<0.01	29 (29.00)	<0.01	29 (29.00)	<0.01
scc_rt_damascus	15	15 (15.00)	<0.01	15 (15.00)	<0.01	15 (15.00)	<0.01
scc_rt_dash	15	15 (15.00)	<0.01	15 (15.00)	<0.01	15 (15.00)	<0.01
scc_rt_gmanews	46	46 (46.00)	<0.01	46 (46.00)	<0.01	46 (46.00)	<0.01
scc_rt_gop	6	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01
scc_rt_http	2	2 (2.00)	<0.01	2 (2.00)	<0.01	2 (2.00)	<0.01
scc_rt_israel	11	11 (11.00)	<0.01	11 (11.00)	<0.01	11 (11.00)	<0.01
scc_rt_justinbieber	26	26 (26.00)	<0.01	26 (26.00)	<0.01	26 (26.00)	<0.01
scc_rt_ksa	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_lebanon	5	5 (5.00)	<0.01	5 (5.00)	<0.01	5 (5.00)	<0.01
scc_rt_libya	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_lolgop	103	103 (103.00)	<0.01	103 (103.00)	<0.01	103 (103.00)	<0.01
scc_rt_mittromney	42	42 (42.00)	<0.01	42 (42.00)	<0.01	42 (42.00)	<0.01
scc_rt_obama	4	4 (4.00)	<0.01	4 (4.00)	<0.01	4 (4.00)	<0.01
scc_rt_occupy	22	22 (22.00)	<0.01	22 (22.00)	<0.01	22 (22.00)	<0.01
scc_rt_occupywallstnyc	45	45 (45.00)	<0.01	45 (45.00)	<0.01	45 (45.00)	<0.01
scc_rt_oman	6	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01
scc_rt_onedirection	29	29 (29.00)	<0.01	29 (29.00)	<0.01	29 (29.00)	<0.01

Table 6: Results of *MetaVC2*, *MetaVC*, and *FastVC2+p* on the *REAL-WORLD-EASY* benchmark (Part 2).

Graphs		MetaVC2		MetaVC		FastVC2+p	
Instance	VC*	min (avg)	time	min (avg)	time	min (avg)	time
scc_rt_p2	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_qatif	5	5 (5.00)	<0.01	5 (5.00)	<0.01	5 (5.00)	<0.01
scc_rt_saudi	17	17 (17.00)	<0.01	17 (17.00)	<0.01	17 (17.00)	<0.01
scc_rt_tcot	12	12 (12.00)	<0.01	12 (12.00)	<0.01	12 (12.00)	<0.01
scc_rt_tlot	6	6 (6.00)	<0.01	6 (6.00)	<0.01	6 (6.00)	<0.01
scc_rt_uae	8	8 (8.00)	<0.01	8 (8.00)	<0.01	8 (8.00)	<0.01
scc_rt_voteonedirection	4	4 (4.00)	<0.01	4 (4.00)	<0.01	4 (4.00)	<0.01
scc_twitter-copen	1326	1326 (1326.00)	0.27	1326 (1326.00)	0.26	1326 (1326.00)	0.22
soc-BlogCatalog	20752	20752 (20752.00)	0.91	20752 (20752.00)	0.87	20752 (20752.00)	0.90
soc-FourSquare	90108	90108 (90108.00)	2.65	90108 (90108.00)	2.82	90108 (90108.00)	3.03
soc-LiveMocha	43427	43427 (43427.00)	0.99	43427 (43427.00)	0.97	43427 (43427.00)	0.98
soc-brightkite	21190	21190 (21190.00)	0.07	21190 (21190.00)	0.05	21190 (21190.00)	0.04
soc-buzznet	30613	30613 (30613.00)	1.20	30613 (30613.00)	2.70	30613 (30613.00)	1.10
soc-digg	103234	103234 (103234.00)	3.60	103234 (103234.00)	3.42	103234 (103234.00)	3.85
soc-dolphins	34	34 (34.00)	<0.01	34 (34.00)	<0.01	34 (34.00)	<0.01
soc-douban	8685	8685 (8685.00)	0.08	8685 (8685.00)	0.09	8685 (8685.00)	0.07
soc-epinions	9757	9757 (9757.00)	0.01	9757 (9757.00)	0.01	9757 (9757.00)	0.01
soc-flickr	153271	153271 (153271.00)	1.72	153271 (153271.00)	2.01	153271 (153271.00)	9.04
soc-flixster	96317	96317 (96317.00)	4.52	96317 (96317.00)	4.34	96317 (96317.00)	4.69
soc-gowalla	84222	84222 (84222.00)	0.40	84222 (84222.00)	0.46	84222 (84222.00)	4.39
soc-karate	14	14 (14.00)	<0.01	14 (14.00)	<0.01	14 (14.00)	<0.01
soc-lastfm	78688	78688 (78688.00)	2.64	78688 (78688.00)	2.60	78688 (78688.00)	2.49
soc-slashdot	22373	22373 (22373.00)	0.09	22373 (22373.00)	0.09	22373 (22373.00)	0.10
soc-twitter-follows	2323	2323 (2323.00)	0.51	2323 (2323.00)	0.49	2323 (2323.00)	0.52
soc-wiki-Vote	406	406 (406.00)	<0.01	406 (406.00)	<0.01	406 (406.00)	<0.01
soc-youtube	146376	146376 (146376.00)	0.90	146376 (146376.00)	0.95	146376 (146376.00)	1.01
soc-youtube-snap	276945	276945 (276945.00)	1.68	276945 (276945.00)	1.50	276945 (276945.00)	1.67
socfb-A-anon	375230	375230 (375230.00)	15.21	375230 (375230.00)	14.62	375230 (375230.00)	15.23
socfb-B-anon	303048	303048 (303048.00)	13.88	303048 (303048.00)	13.15	303048 (303048.00)	13.91
socfb-Duke14	7683	7683 (7683.00)	7.76	7683 (7683.00)	655.01	7683 (7683.00)	112.13
socfb-MIT	4657	4657 (4657.00)	2.33	4657 (4657.00)	103.19	4657 (4657.00)	7.62
socfb-Stanford3	8517	8517 (8517.00)	443.73	8518 (8518.00)	10.33	8518 (8518.00)	2.72
tech-WHOIS	2284	2284 (2284.00)	<0.01	2284 (2284.00)	<0.01	2284 (2284.00)	<0.01
tech-as-caida2007	3683	3683 (3683.00)	<0.01	3683 (3683.00)	<0.01	3683 (3683.00)	<0.01
tech-internet-as	5700	5700 (5700.00)	0.01	5700 (5700.00)	0.01	5700 (5700.00)	<0.01
tech-p2p-gnutella	15682	15682 (15682.00)	0.02	15682 (15682.00)	0.02	15682 (15682.00)	0.01
tech-routers-rf	795	795 (795.00)	<0.01	795 (795.00)	<0.01	795 (795.00)	<0.01
web-BerkStan	5384	5384 (5384.00)	<0.01	5384 (5384.00)	<0.01	5384 (5384.00)	<0.01
web-arabic-2005	114420	114420 (114420.00)	0.80	114420 (114420.00)	0.83	114420 (114420.00)	0.60
web-edu	1451	1451 (1451.00)	<0.01	1451 (1451.00)	<0.01	1451 (1451.00)	<0.01
web-google	498	498 (498.00)	<0.01	498 (498.00)	<0.01	498 (498.00)	<0.01
web-indochina-2004	7300	7300 (7300.00)	<0.01	7300 (7300.00)	<0.01	7300 (7300.00)	<0.01
web-polblogs	244	244 (244.00)	<0.01	244 (244.00)	<0.01	244 (244.00)	<0.01
web-sk-2005	58173	58173 (58173.00)	50.75	58173 (58173.00)	61.99	58173 (58173.00)	1.95
web-spam	2297	2297 (2297.00)	<0.01	2297 (2297.00)	<0.01	2297 (2297.00)	<0.01
web-uk-2005	127774	127774 (127774.00)	8.99	127774 (127774.00)	8.98	127774 (127774.00)	8.90