

Table 1: Experimental results on BHOSLIB benchmark.

Graph	<i>solBest</i>	PbO-MWC #Suc(<i>t_{avg}</i>)	MN/TS #Suc(<i>t_{avg}</i>)	LSCC #Suc(<i>t_{avg}</i>)	LSCC+BMS #Suc(<i>t_{avg}</i>)	RRWL #Suc(<i>t_{avg}</i>)	TSM-MWC #Suc(<i>time</i>)
frb45-21-1	4760	100 (14.459)	100 (68.809)	46(1349.447)	42(1414.568)	51(1085.535)	0 (1029.450)
frb45-21-2	4784	100 (1.759)	100 (14.099)	78(1326.001)	70(1352.767)	57(1032.973)	0 (2733.750)
frb45-21-3	4765	100 (2.565)	100 (22.378)	53(1607.364)	51(1638.062)	64(1288.928)	0 (1563.770)
frb45-21-4	4799	100 (1.245)	100 (49.663)	67(1442.893)	59(1510.165)	85(1139.340)	0 (1329.360)
frb45-21-5	4779	100 (2.294)	100 (5.323)	100 (301.269)	100 (338.229)	95 (393.415)	0 (1772.870)
frb30-15-1	2990	100 (0.167)	100 (0.313)	100 (3.979)	100 (4.751)	100 (2.606)	0 (2394.070)
frb30-15-2	3006	100 (0.023)	100 (0.934)	100 (3.404)	100 (3.696)	100 (2.604)	100 (900.900)
frb30-15-3	2995	100 (0.202)	100 (0.635)	100 (13.648)	100 (14.819)	100 (4.423)	100(1562.590)
frb30-15-4	3032	100 (0.004)	100 (0.079)	100 (0.289)	100 (0.415)	100 (0.747)	100 (296.190)
frb30-15-5	3011	100 (0.029)	100 (0.684)	100 (3.524)	100 (3.994)	100 (2.340)	100(2000.440)
frb35-17-1	3650	100 (0.808)	100 (4.672)	100 (91.153)	100 (107.303)	100 (38.994)	0 (3354.780)
frb35-17-2	3738	100 (3.187)	100 (28.094)	100 (151.364)	100 (173.864)	100 (196.664)	0 (3276.140)
frb35-17-3	3716	100 (0.378)	100 (4.365)	100 (42.298)	100 (49.195)	100 (29.877)	0 (2267.320)
frb35-17-4	3683	100 (0.429)	100 (4.245)	100 (328.516)	100 (406.264)	100 (136.796)	0 (3440.670)
frb35-17-5	3686	100 (0.548)	100 (1.058)	100 (20.187)	100 (22.571)	100 (19.197)	0 (2461.840)
frb40-19-1	4063	100 (5.377)	100 (11.478)	100 (341.834)	100 (438.977)	100 (497.250)	0 (3344.290)
frb40-19-2	4112	100 (2.137)	100 (23.773)	99 (656.502)	99 (747.700)	98 (879.786)	0 (3584.080)
frb40-19-3	4115	100 (9.149)	100 (72.378)	97 (913.408)	94(1017.261)	92 (898.788)	0 (2150.580)
frb40-19-4	4136	100 (1.121)	100 (65.162)	97 (850.168)	96 (921.804)	95 (823.619)	0 (1722.160)
frb40-19-5	4118	100 (2.928)	100 (16.579)	100 (434.633)	100 (514.314)	97 (317.954)	0 (1008.240)
frb50-23-1	5494	100(119.462)	77(1532.625)	3 (1643.836)	1 (1741.232)	3 (1375.311)	0 (3040.930)
frb50-23-2	5462	100 (92.994)	71(1154.720)	6 (1577.357)	5 (1652.677)	10(1372.736)	0 (319.980)
frb50-23-3	5486	100 (17.533)	100 (47.560)	17(1703.953)	11(1619.835)	17(1326.604)	0 (2949.470)
frb50-23-4	5454	99 (1035.311)	58 (919.783)	0 (1792.514)	0 (1729.724)	1 (1256.577)	0 (3560.910)
frb50-23-5	5498	100 (5.399)	100 (26.746)	70(1578.170)	62(1653.499)	60(1284.259)	0 (2748.320)
frb53-24-1	5670	100 (33.530)	100 (398.036)	7 (1666.790)	3 (1788.058)	7 (1424.357)	0 (562.150)
frb53-24-2	5707	100 (98.211)	54(1681.134)	2 (1756.783)	3 (1668.641)	2 (1245.848)	0 (3453.760)
frb53-24-3	5655	100 (711.933)	29 (666.191)	1 (1836.278)	1 (1960.289)	0 (1511.852)	0 (3433.890)
frb53-24-4	5714	100 (77.797)	30(1051.233)	0 (1730.691)	0 (1801.601)	0 (1536.212)	0 (2215.230)
frb53-24-5	5659	100(286.630)	42(1664.354)	0 (1641.510)	0 (1635.425)	1 (1314.714)	0 (1657.180)
frb56-25-1	5916	100 (35.216)	97 (935.194)	1 (1996.991)	1 (1779.035)	2 (1459.226)	0 (3456.430)
frb56-25-2	5886	100 (37.982)	35(1727.162)	1 (1770.091)	0 (1798.876)	1 (1495.152)	0 (1467.520)
frb56-25-3	5859	98 (706.840)	20(1498.373)	0 (1868.919)	0 (1799.464)	0 (1461.475)	0 (2619.290)
frb56-25-4	5892	99 (678.962)	30(1719.638)	0 (1765.438)	0 (1862.983)	0 (1434.981)	0 (2525.100)
frb56-25-5	5853	94(1022.826)	12(1594.286)	0 (1625.700)	0 (1730.110)	0 (1599.427)	0 (2425.130)
frb59-26-1	6591	100 (33.607)	100 (464.091)	0 (1693.629)	0 (1737.817)	1 (1367.452)	0 (2930.000)
frb59-26-2	6645	100(111.328)	99 (632.977)	2 (1875.558)	0 (1843.966)	1 (1470.946)	0 (2124.560)
frb59-26-3	6608	100 (74.141)	34(1534.772)	0 (1991.458)	0 (1930.665)	0 (1513.631)	0 (1590.650)
frb59-26-4	6592	100 (92.463)	95 (988.683)	1 (1678.177)	1 (1727.378)	1 (1502.068)	0 (23.280)
frb59-26-5	6584	100(279.545)	48(1429.216)	0 (1652.560)	0 (1797.136)	0 (1536.050)	0 (2806.550)

Table 2: Experimental results on DIMACS benchmark - Part I.

Graph	PbO-MWC		MN/TS		LSCC		LSCC+BMS		RRWL		TSM-MWC	
	$w_{max}(w_{avg})$	t_{avg}	$w_{max}(w_{avg})$	t_{avg}	$w_{max}(w_{avg})$	t_{avg}	$w_{max}(w_{avg})$	t_{avg}	$w_{max}(w_{avg})$	t_{avg}	w_{sol}	time
MANN_a45	34263(34262.59)		34226(34199.31)		34256(34254.02)		34258(34253.84)		34263(34254.72)		34265	
	(1490.467)		(1815.412)		(425.650)		(1291.260)		(357.249)		(404.800)	
brock800_4	2971(2971.00)		2971(2970.98)		2971(2970.80)		2971(2970.78)		2971(2971.00)		2971	
	(42.734)		(774.713)		(1176.934)		(1128.025)		(126.596)		(2540.720)	
C2000.9	10999(10999.00)		10999(10999.00)		10999(10951.90)		10999(10951.25)		10999(10951.41)		8338	
	(101.025)		(191.816)		(1919.433)		(1902.930)		(1437.638)		(2311.820)	
c-fat500-10	11586(11586.00)		11586(11586.00)		11586(11586.00)		11586(11586.00)		11586(11586.00)		11586	
	(0.248)		(0.059)		(<0.001)		(<0.001)		(0.379)		(0.190)	
DSJC1000.5	2186(2186.00)		2186(2186.00)		2186(2186.00)		2186(2186.00)		2186(2186.00)		2186	
	(0.083)		(0.047)		(5.955)		(5.989)		(1.158)		(54.910)	
gen400_p0.9_75	8006(8006.00)		8006(8006.00)		8006(8006.00)		8006(8006.00)		8006(8006.00)		8006	
	(0.001)		(0.007)		(0.638)		(0.693)		(0.538)		(77.200)	
hamming10-2	50512(50512.00)		50512(50512.00)		50512(50512.00)		50512(50512.00)		50512(50512.00)		50512	
	(0.145)		(0.652)		(0.588)		(0.516)		(0.966)		(43.290)	
johnson32-2-4	2033(2033.00)		2033(2033.00)		2033(2033.00)		2033(2033.00)		2033(2033.00)		1891	
	(0.003)		(0.811)		(0.151)		(0.154)		(0.410)		(10.590)	
p_hat1500-3	10321(10321.00)		10321(10321.00)		10321(10321.00)		10321(10321.00)		10321(10321.00)		10321	
	(2.855)		(29.639)		(113.621)		(117.621)		(30.924)		(3336.320)	
san400_0.9_1	9776(9776.00)		9776(9776.00)		9776(9776.00)		9776(9776.00)		9776(9776.00)		9776	
	(3.402)		(1.646)		(2.848)		(3.218)		(3.511)		(75.290)	
MANN_a27	12283(12283.00)		12282(12276.98)		12283(12283.00)		12283(12283.00)		12283(12283.00)		12283	
	(3.974)		(1377.077)		(129.249)		(251.788)		(270.134)		(4.400)	
MANN_a81	111355(111342.37)		110171(110090.74)		111302(111250.54)		111269(111207.88)		111324(111303.34)		109970	
	(1639.896)		(1818.422)		(1639.686)		(1861.101)		(1784.362)		(3202.890)	
MANN_a9	372(372.00)		372(372.00)		372(372.00)		372(372.00)		372(372.00)		372	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)		(0.346)		(0.090)	
brock200_1	2821(2821.00)		2821(2821.00)		2821(2821.00)		2821(2821.00)		2821(2821.00)		2821	
	(<0.001)		(<0.001)		(0.004)		(0.002)		(0.379)		(0.290)	
brock200_2	1428(1428.00)		1428(1428.00)		1428(1428.00)		1428(1428.00)		1428(1428.00)		1428	
	(<0.001)		(<0.001)		(0.004)		(0.001)		(0.370)		(0.090)	
brock200_3	2062(2062.00)		2062(2062.00)		2062(2062.00)		2062(2062.00)		2062(2062.00)		2062	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)		(0.379)		(0.190)	
brock200_4	2107(2107.00)		2107(2107.00)		2107(2107.00)		2107(2107.00)		2107(2107.00)		2107	
	(<0.001)		(<0.001)		(0.001)		(0.001)		(0.373)		(0.190)	
brock400_1	3422(3422.00)		3422(3422.00)		3422(3422.00)		3422(3422.00)		3422(3422.00)		3422	
	(<0.001)		(<0.001)		(0.176)		(0.172)		(0.428)		(93.190)	
brock400_2	3350(3350.00)		3350(3350.00)		3350(3350.00)		3350(3350.00)		3350(3350.00)		3350	
	(0.001)		(0.001)		(0.442)		(0.451)		(0.461)		(105.100)	
brock400_3	3471(3471.00)		3471(3471.00)		3471(3471.00)		3471(3471.00)		3471(3471.00)		3471	
	(0.001)		(0.001)		(0.406)		(0.419)		(0.456)		(7.710)	
brock400_4	3626(3626.00)		3626(3626.00)		3626(3626.00)		3626(3626.00)		3626(3626.00)		3626	
	(0.632)		(0.988)		(12.447)		(13.083)		(1.634)		(136.900)	
brock800_1	3121(3121.00)		3121(3121.00)		3121(3121.00)		3121(3121.00)		3121(3121.00)		3121	
	(0.018)		(0.010)		(0.177)		(0.175)		(0.578)		(1000.010)	
brock800_2	3043(3043.00)		3043(3043.00)		3043(3043.00)		3043(3043.00)		3043(3043.00)		3043	
	(0.065)		(0.044)		(1.174)		(1.194)		(0.830)		(2316.700)	
brock800_3	3076(3076.00)		3076(3076.00)		3076(3076.00)		3076(3076.00)		3076(3076.00)		3076	
	(0.048)		(0.037)		(0.265)		(0.268)		(0.721)		(1078.990)	
C1000.9	9254(9254.00)		9254(9254.00)		9254(9254.00)		9254(9254.00)		9254(9254.00)		7477	
	(1.214)		(1.201)		(177.922)		(186.512)		(63.886)		(2806.730)	
C125.9	2529(2529.00)		2529(2529.00)		2529(2529.00)		2529(2529.00)		2529(2529.00)		2529	
	(<0.001)		(<0.001)		(0.227)		(0.235)		(0.399)		(0.190)	
C2000.5	2466(2466.00)		2466(2466.00)		2466(2466.00)		2466(2466.00)		2466(2466.00)		2466	
	(0.578)		(0.577)		(2.637)		(2.641)		(3.156)		(1063.770)	
C250.9	5092(5092.00)		5092(5092.00)		5092(5092.00)		5092(5092.00)		5092(5092.00)		5092	
	(0.002)		(<0.001)		(0.182)		(0.196)		(0.425)		(21.490)	
C4000.5	2792(2792.00)		2792(2792.00)		2792(2792.00)		2792(2792.00)		2792(2792.00)		2502	
	(13.808)		(14.050)		(77.724)		(79.793)		(129.973)		(3497.290)	
C500.9	6955(6955.00)		6955(6955.00)		6955(6955.00)		6955(6955.00)		6955(6955.00)		6570	
	(0.002)		(0.002)		(1.692)		(1.801)		(0.816)		(3556.600)	
c-fat200-1	1284(1284.00)		1284(1284.00)		1284(1284.00)		1284(1284.00)		1284(1284.00)		1284	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)		(0.335)		(0.080)	
c-fat200-2	2411(2411.00)		2411(2411.00)		2411(2411.00)		2411(2411.00)		2411(2411.00)		2411	
	(0.333)		(0.158)		(<0.001)		(<0.001)		(0.343)		(0.090)	
c-fat200-5	5887(5887.00)		5887(5887.00)		5887(5887.00)		5887(5887.00)		5887(5887.00)		5887	
	(0.078)		(0.014)		(<0.001)		(<0.001)		(0.339)		(0.090)	
c-fat500-1	1354(1354.00)		1354(1354.00)		1354(1354.00)		1354(1354.00)		1354(1354.00)		1354	
	(0.155)		(0.003)		(<0.001)		(<0.001)		(0.355)		(0.090)	
c-fat500-2	2628(2628.00)		2628(2628.00)		2628(2628.00)		2628(2628.00)		2628(2628.00)		2628	
	(2.402)		(0.632)		(<0.001)		(<0.001)		(0.359)		(0.090)	
c-fat500-5	5841(5841.00)		5841(5841.00)		5841(5841.00)		5841(5841.00)		5841(5841.00)		5841	
	(0.763)		(0.222)		(<0.001)		(<0.001)		(0.381)		(0.090)	
DSJC500.5	1725(1725.00)		1725(1725.00)		1725(1725.00)		1725(1725.00)		1725(1725.00)		1725	
	(0.001)		(0.012)		(0.865)		(0.873)		(0.428)		(1.490)	
gen200_p0.9_44	5043(5043.00)		5043(5043.00)		5043(5043.00)		5043(5043.00)		5043(5043.00)		5043	
	(<0.001)		(<0.001)		(0.043)		(0.045)		(0.367)		(0.290)	
gen200_p0.9_55	5416(5416.00)		5416(5416.00)		5416(5416.00)		5416(5416.00)		5416(5416.00)		5416	
	(<0.001)		(0.002)		(0.077)		(0.075)		(0.369)		(0.890)	
gen400_p0.9_55	6718(6718.00)		6718(6718.00)		6718(6718.00)		6718(6718.00)		6718(6718.00)		6661	
	(0.006)		(0.014)		(3.486)		(3.686)		(1.737)		(795.220)	
gen400_p0.9_65	6940(6940.00)		6940(6940.00)		6940(6940.00)		6940(6940.00)		6940(6940.00)		6700	
	(0.001)		(<0.001)		(3.539)		(3.734)		(0.855)		(2364.020)	
hamming10-4	5129(5129.00)		5129(5129.00)		5129(5129.00)		5129(5129.00)		5129(5129.00)		4828	
	(1.148)		(2.846)		(19.140)		(21.761)		(23.739)		(1244.040)	
hamming6-2	1072(1072.00)		1072(1072.00)		1072(1072.00)		1072(1072.00)		1072(1072.00)		1072	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)		(0.358)		(0.100)	

Table 2: Experimental results on DIMACS benchmark- Part II.

Graph	PbO-MWC	MN/TS	LSCC	LSCC+BMS	RRWL	TSM-MWC
	$w_{max}(w_{avg})$ t_{avg}	$w_{max}(w_{avg})$ t_{avg}	$w_{max}(w_{avg})$ t_{avg}	$w_{max}(w_{avg})$ t_{avg}	$w_{max}(w_{avg})$ t_{avg}	w_{sol} time
hamming6-4	134(134.00) (<0.001)	134(134.00) (<0.001)	134(134.00) (<0.001)	134(134.00) (<0.001)	134(134.00) (0.364)	134 (0.090)
hamming8-2	10976(10976.00) (0.018)	10976(10976.00) (0.005)	10976(10976.00) (0.016)	10976(10976.00) (0.008)	10976(10976.00) (0.406)	10976 (0.480)
hamming8-4	1472(1472.00) (<0.001)	1472(1472.00) (<0.001)	1472(1472.00) (0.001)	1472(1472.00) (<0.001)	1472(1472.00) (0.361)	1472 (0.090)
johnson16-2-4	548(548.00) (<0.001)	548(548.00) (0.583)	548(548.00) (0.251)	548(548.00) (0.269)	548(548.00) (0.345)	548 (0.090)
johnson8-2-4	66(66.00) (<0.001)	66(66.00) (<0.001)	66(66.00) (<0.001)	66(66.00) (<0.001)	66(66.00) (0.341)	66 (0.090)
johnson8-4-4	511(511.00) (<0.001)	511(511.00) (<0.001)	511(511.00) (<0.001)	511(511.00) (<0.001)	511(511.00) (0.336)	511 (0.090)
keller4	1153(1153.00) (<0.001)	1153(1153.00) (<0.001)	1153(1153.00) (0.022)	1153(1153.00) (0.016)	1153(1153.00) (0.361)	1153 (0.190)
keller5	3317(3317.00) (0.332)	3317(3317.00) (0.245)	3317(3317.00) (15.977)	3317(3317.00) (18.548)	3317(3317.00) (6.088)	3097 (3472.040)
keller6	8062(8062.00) (83.535)	8062(8062.00) (509.848)	8062(7858.60) (1729.344)	8062(7862.85) (1895.647)	8062(7892.65) (1633.382)	4793 (3564.280)
p_hat1000-1	1514(1514.00) (0.013)	1514(1514.00) (0.015)	1514(1514.00) (0.799)	1514(1514.00) (0.813)	1514(1514.00) (0.443)	1514 (0.390)
p_hat1000-2	5777(5777.00) (0.043)	5777(5777.00) (0.010)	5777(5777.00) (0.117)	5777(5777.00) (0.115)	5777(5777.00) (0.470)	5777 (1.280)
p_hat1000-3	8111(8111.00) (0.202)	8111(8111.00) (0.063)	8111(8111.00) (2.253)	8111(8111.00) (2.381)	8111(8111.00) (0.841)	8111 (625.470)
p_hat1500-1	1619(1619.00) (0.086)	1619(1619.00) (0.035)	1619(1619.00) (0.068)	1619(1619.00) (0.046)	1619(1619.00) (0.581)	1619 (1.110)
p_hat1500-2	7360(7360.00) (0.426)	7360(7360.00) (0.193)	7360(7360.00) (1.101)	7360(7360.00) (1.120)	7360(7360.00) (0.747)	7360 (10.080)
p_hat300-1	1057(1057.00) (<0.001)	1057(1057.00) (<0.001)	1057(1057.00) (<0.001)	1057(1057.00) (<0.001)	1057(1057.00) (0.379)	1057 (0.090)
p_hat300-2	2487(2487.00) (<0.001)	2487(2487.00) (<0.001)	2487(2487.00) (0.003)	2487(2487.00) (0.002)	2487(2487.00) (0.400)	2487 (0.100)
p_hat300-3	3774(3774.00) (<0.001)	3774(3774.00) (<0.001)	3774(3774.00) (0.016)	3774(3774.00) (0.013)	3774(3774.00) (0.401)	3774 (0.290)
p_hat500-1	1231(1231.00) (<0.001)	1231(1231.00) (<0.001)	1231(1231.00) (<0.001)	1231(1231.00) (<0.001)	1231(1231.00) (0.402)	1231 (0.190)
p_hat500-2	3920(3920.00) (<0.001)	3920(3920.00) (<0.001)	3920(3920.00) (0.037)	3920(3920.00) (0.028)	3920(3920.00) (0.412)	3920 (0.190)
p_hat500-3	5375(5375.00) (0.020)	5375(5375.00) (0.002)	5375(5375.00) (0.225)	5375(5375.00) (0.227)	5375(5375.00) (0.432)	5375 (2.590)
p_hat700-1	1441(1441.00) (0.001)	1441(1441.00) (0.002)	1441(1441.00) (0.046)	1441(1441.00) (0.040)	1441(1441.00) (0.412)	1441 (0.190)
p_hat700-2	5290(5290.00) (0.003)	5290(5290.00) (<0.001)	5290(5290.00) (0.016)	5290(5290.00) (0.011)	5290(5290.00) (0.423)	5290 (0.190)
p_hat700-3	7565(7565.00) (0.072)	7565(7565.00) (0.035)	7565(7565.00) (1.831)	7565(7565.00) (1.889)	7565(7565.00) (0.667)	7565 (0.690)
san1000	1716(1716.00) (11.055)	1716(1716.00) (7.871)	1716(1716.00) (656.871)	1716(1716.00) (90.903)	1716(1716.00) (14.471)	1716 (5.580)
san200_0.7_1	3370(3370.00) (0.147)	3370(3370.00) (0.026)	3370(3370.00) (0.006)	3370(3370.00) (0.006)	3370(3370.00) (0.406)	3370 (0.190)
san200_0.7_2	2422(2422.00) (0.002)	2422(2422.00) (<0.001)	2422(2422.00) (<0.001)	2422(2422.00) (<0.001)	2422(2422.00) (0.395)	2422 (0.090)
san200_0.9_1	6825(6825.00) (0.989)	6825(6825.00) (0.237)	6825(6825.00) (0.315)	6825(6825.00) (0.361)	6825(6825.00) (0.443)	6825 (0.190)
san200_0.9_2	6082(6082.00) (0.104)	6082(6082.00) (0.048)	6082(6082.00) (0.041)	6082(6082.00) (0.037)	6082(6082.00) (0.394)	6082 (0.290)
san200_0.9_3	4748(4748.00) (<0.001)	4748(4748.00) (<0.001)	4748(4748.00) (0.016)	4748(4748.00) (0.011)	4748(4748.00) (0.392)	4748 (1.890)
san400_0.5_1	1455(1455.00) (0.009)	1455(1455.00) (0.004)	1455(1455.00) (0.065)	1455(1455.00) (0.499)	1455(1455.00) (0.444)	1455 (0.390)
san400_0.7_1	3941(3941.00) (158.120)	3941(3941.00) (42.184)	3941(3941.00) (62.246)	3941(3941.00) (88.384)	3941(3941.00) (7.087)	3941 (1.490)
san400_0.7_2	3110(3110.00) (245.999)	3110(3110.00) (75.019)	3110(3110.00) (197.050)	3110(3110.00) (223.260)	3110(3110.00) (15.661)	3110 (3.890)
san400_0.7_3	2771(2771.00) (0.028)	2771(2771.00) (0.089)	2771(2771.00) (7.880)	2771(2771.00) (2.286)	2771(2771.00) (1.606)	2771 (1.110)
sanr200_0.7	2325(2325.00) (<0.001)	2325(2325.00) (<0.001)	2325(2325.00) (0.012)	2325(2325.00) (0.010)	2325(2325.00) (0.386)	2325 (0.290)
sanr200_0.9	5126(5126.00) (<0.001)	5126(5126.00) (<0.001)	5126(5126.00) (0.002)	5126(5126.00) (0.001)	5126(5126.00) (0.388)	5126 (1.490)
sanr400_0.5	1835(1835.00) (<0.001)	1835(1835.00) (<0.001)	1835(1835.00) (0.060)	1835(1835.00) (0.048)	1835(1835.00) (0.418)	1835 (0.190)
sanr400_0.7	2992(2992.00) (<0.001)	2992(2992.00) (<0.001)	2992(2992.00) (0.007)	2992(2992.00) (0.002)	2992(2992.00) (0.407)	2992 (18.890)

Table 3: Experimental results on KES benchmark.

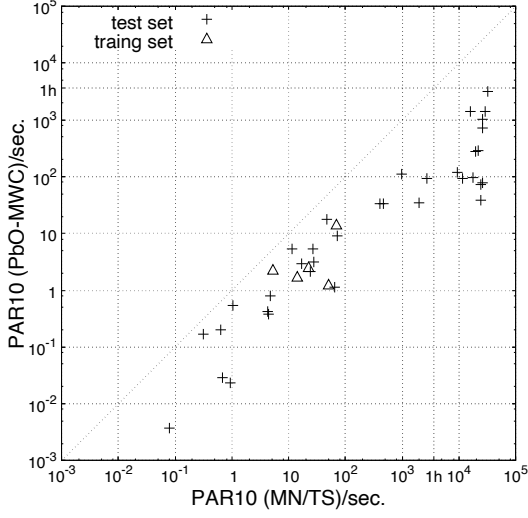
Graph	<i>solBest</i>	PbO-MWC #Suc(t_{avg})	MN/TS #Suc(t_{avg})	LSCC #Suc(t_{avg})	LSCC+BMS #Suc(t_{avg})	RRWL #Suc(t_{avg})	TSM-MWC #Suc(t_{time})
83	1237688860685	100 (0.895)	100 (76.022)	100 (73.769)	100 (93.026)	100(142.617)	100 (162.390)
84	1100166012937	100 (0.593)	100(170.961)	100 (5.882)	100 (12.575)	100 (10.478)	100 (189.200)
91	1306441900046	100 (4.447)	90(1274.412)	100(267.249)	86(1148.002)	100(348.165)	0 (112.590)
96	1375094325251	100 (1.572)	13 (271.969)	100(272.134)	85 (959.731)	100(440.349)	0 (6.290)
97	1375144632330	100 (2.045)	3 (507.525)	100(414.291)	82(1196.935)	73(1052.616)	0 (744.600)
105	1787797020693	100 (7.879)	92(1073.198)	74(1363.477)	70(1293.008)	43(1177.404)	0 (119.590)
107	1650240659468	100 (4.792)	95(1011.776)	78(1196.789)	52(1548.089)	41(1312.153)	0 (148.390)
114	2406557630478	100(17.364)	0 (1535.306)	2 (1590.658)	2 (1693.137)	2 (1776.499)	0 (1671.880)
116	2131511910416	100 (5.393)	0 (1383.749)	82(1110.178)	68(1349.423)	38(1491.430)	0 (414.780)
119	2269068296209	100 (4.812)	3 (1220.001)	100(679.383)	99 (743.593)	75(1281.739)	0 (488.960)
71	1306458693642	100 (0.307)	100 (0.506)	100 (3.692)	100 (2.532)	100 (10.101)	100 (194.990)
73	1237638553607	100 (0.082)	100 (0.166)	100 (0.855)	100 (0.573)	100 (2.911)	100(1896.270)
74	756484685838	100 (0.032)	100 (0.105)	100 (0.877)	100 (0.606)	100 (1.640)	100 (0.490)
81	1650240634895	100(10.112)	42 (952.869)	92 (928.713)	98(1004.306)	51(1255.399)	0 (994.070)
82	1443914440714	100 (2.676)	0 (1454.161)	100 (52.113)	100 (52.100)	100 (96.197)	100 (601.480)
85	1100216320013	100 (1.168)	100 (3.232)	100 (33.098)	100 (63.250)	100 (71.106)	100 (14.990)
86	893940432911	100 (0.390)	100 (0.387)	100 (3.391)	100 (1.991)	100 (5.186)	100 (427.190)
87	1375194939405	100 (1.127)	100 (3.583)	100 (50.560)	100 (34.520)	100(171.926)	100 (8.060)
88	1375211708430	100 (0.796)	100 (0.840)	100 (5.799)	100 (7.199)	100 (8.428)	100 (666.430)
89	893940457482	100 (0.329)	100 (7.763)	100 (59.544)	100 (52.238)	100 (75.254)	100 (0.790)
92	1581403750408	100 (1.738)	0 (1159.796)	100(544.064)	93(1182.126)	85(1183.945)	100 (5.690)
93	1031496818707	100 (1.480)	100 (1.302)	100 (6.535)	100 (3.934)	100 (7.124)	100 (119.150)
94	1031547150353	100 (1.118)	100 (2.025)	100(106.281)	100 (49.779)	100(137.152)	100 (77.780)
95	1375245246480	100 (2.556)	100 (48.995)	100(192.375)	100(432.595)	100(418.615)	0 (14.880)
98	1443947978765	100 (1.156)	100 (8.000)	100 (13.263)	100 (11.132)	100 (21.734)	100 (501.780)
99	1237722398735	100 (1.985)	100 (11.295)	100 (18.543)	100 (19.415)	100 (38.765)	0 (974.380)
100	1512701018124	100 (1.586)	21 (524.223)	100(185.291)	100(230.710)	100(515.888)	0 (13.090)
101	1650207096842	100 (5.288)	0 (1246.877)	83(1174.490)	23(1066.035)	68(1473.039)	100 (20.390)
102	1718960136202	100 (2.812)	30 (623.679)	100 (92.241)	95 (824.607)	100(236.558)	0 (132.650)
103	1512701018125	100 (3.859)	38 (668.578)	100 (62.515)	100(109.763)	100 (82.190)	0 (34.780)
104	1512818425875	100 (4.727)	40(1647.883)	78(1141.392)	74(1244.486)	18(1163.635)	0 (1162.670)
106	1375228477454	100 (2.745)	100(140.282)	100(821.318)	97(1034.791)	76(1485.375)	0 (10.090)
108	1581487595537	100 (5.361)	99 (450.271)	99 (657.236)	85(1129.557)	95(1050.945)	0 (32.390)
109	1718976905230	100 (3.911)	1 (1306.312)	100(551.843)	59(1248.325)	88(1310.915)	0 (3352.550)
110	1512768094224	100 (3.801)	100(391.202)	100 (15.364)	100 (13.357)	100 (17.000)	0 (2269.480)
111	2544013377548	100(57.323)	0 (1567.153)	1 (1567.423)	0 (1808.095)	0 (1519.593)	0 (98.890)
112	2475277107217	100(30.221)	0 (1749.538)	5 (1692.161)	0 (1550.411)	0 (1652.289)	0 (3593.620)
113	2200298487823	100 (8.621)	0 (1556.683)	13(1357.006)	16(1540.398)	3 (1510.060)	100 (48.390)
115	1581588209685	100(15.338)	2 (1787.766)	30(1404.084)	87(1038.877)	33(1581.393)	0 (3150.560)
117	1925303123981	100 (7.908)	0 (1474.054)	97(1214.428)	79(1456.617)	64(1177.945)	0 (974.580)
118	2406641475604	100(15.660)	0 (1670.186)	0 (1715.431)	0 (1591.963)	0 (1529.837)	100(1443.190)
120	2337821335572	100(12.455)	0 (1433.344)	19(1570.731)	4 (1409.346)	3 (1737.625)	0 (162.680)

Table 4: Experimental results on REF benchmark.

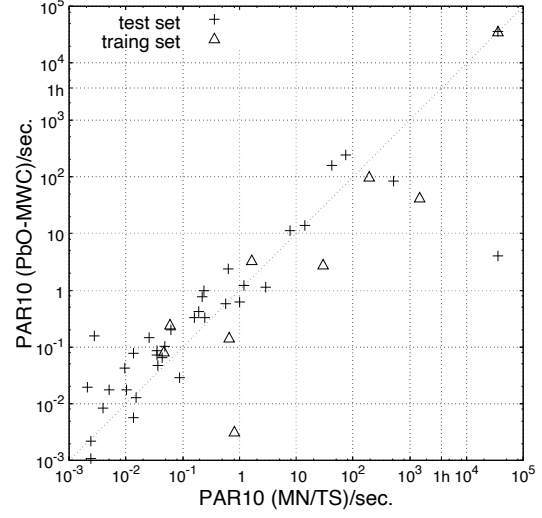
Graph	<i>solBest</i>	PbO-MWC #Suc(t_{avg})	MN/TS #Suc(t_{avg})	LSCC #Suc(t_{avg})	LSCC+BMS #Suc(t_{avg})	RRWL #Suc(t_{avg})	TSM-MWC #Suc(t_{time})
ref-60-1000	743	100 (5.978)	100 (0.096)	100 (2.604)	100 (2.815)	100 (3.587)	100(277.880)
ref-60-230-0	506	100 (37.242)	87(1045.383)	0 (770.114)	0 (758.782)	0 (1240.335)	0 (2477.980)
ref-60-500-7	700	100 (5.511)	100 (58.170)	2 (57.438)	2 (76.478)	0 (39.422)	0 (399.550)
ref-10-20	49	100(< 0.001)	100(< 0.001)	100(< 0.001)	100(< 0.001)	100 (0.361)	100(< 0.001)
ref-10-30	69	100(< 0.001)	100(< 0.001)	100(< 0.001)	100(< 0.001)	100 (0.367)	100(< 0.001)
ref-10-40	93	100(< 0.001)	100(< 0.001)	100(< 0.001)	100(< 0.001)	100 (0.360)	100(< 0.001)
ref-10-50	102	100(< 0.001)	100(< 0.001)	100(< 0.001)	100(< 0.001)	100 (0.368)	100(< 0.001)
ref-30-50	139	100 (0.004)	100(< 0.001)	100 (0.019)	100 (0.013)	100 (0.458)	100(< 0.001)
ref-60-10000	768	100 (14.181)	100 (0.032)	100 (0.097)	100 (0.118)	100 (0.527)	100 (12.890)
ref-60-230-1	506	100 (14.083)	100 (52.042)	2 (259.120)	0 (201.255)	0 (992.196)	0 (830.790)
ref-60-230-2	524	100 (0.030)	100 (0.249)	100(337.901)	100(260.969)	98 (629.556)	0 (3054.720)
ref-60-230-3	502	100 (0.072)	100 (0.244)	100(173.394)	100(194.756)	97 (800.821)	0 (1781.070)
ref-60-230-4	504	100 (0.098)	100 (0.712)	98 (855.686)	100(499.303)	61(1091.397)	0 (1511.560)
ref-60-230-5	503	100 (0.280)	100 (0.339)	100(362.522)	100(429.003)	82(1048.387)	0 (128.590)
ref-60-230-6	505	100 (0.027)	100 (0.091)	100(135.267)	100 (79.723)	100(548.991)	0 (3351.150)
ref-60-230-7	506	100 (2.353)	100 (6.780)	14 (432.156)	15 (429.282)	3 (936.927)	0 (2569.800)
ref-60-230-8	494	100 (0.149)	100 (0.310)	100(355.894)	100(364.748)	93(1022.198)	0 (1219.250)
ref-60-230-9	526	100 (0.352)	100 (2.677)	98(1065.225)	100(599.256)	61(1003.228)	0 (44.490)
ref-60-300	599	100 (0.035)	100 (0.232)	100(183.132)	100(103.767)	99 (708.523)	0 (3567.480)
ref-60-500-0	704	100 (9.023)	48 (735.908)	0 (353.410)	0 (121.051)	0 (325.049)	0 (3552.830)
ref-60-500-1	709	100 (0.020)	100 (0.090)	100 (9.942)	100 (3.448)	100 (11.789)	0 (908.640)
ref-60-500-2	702	100 (0.834)	100 (12.230)	4 (145.902)	3 (155.079)	1 (254.645)	0 (68.080)
ref-60-500-3	716	100 (0.022)	100 (0.044)	100 (2.740)	100 (0.819)	100 (2.881)	0 (14.090)
ref-60-500-4	690	100 (0.168)	100 (0.727)	100(339.175)	100(109.800)	100(804.839)	0 (500.710)
ref-60-500-5	714	100 (0.017)	100 (0.059)	100 (6.718)	100 (1.985)	100 (4.965)	0 (244.470)
ref-60-500-6	715	100 (0.035)	100 (0.089)	100 (8.521)	100 (6.583)	100 (18.712)	0 (3161.160)
ref-60-500-8	714	100 (0.021)	100 (0.100)	100(286.912)	100(123.516)	100(850.038)	0 (411.690)
ref-60-500-9	704	100 (0.923)	100 (5.372)	17 (366.494)	47 (905.199)	9 (204.615)	0 (642.830)
ref-60-500	704	100 (0.476)	100 (0.940)	100(141.320)	100 (81.310)	100 (59.510)	0 (2790.890)

Table 5: The *avgPAR10* on each benchmark.

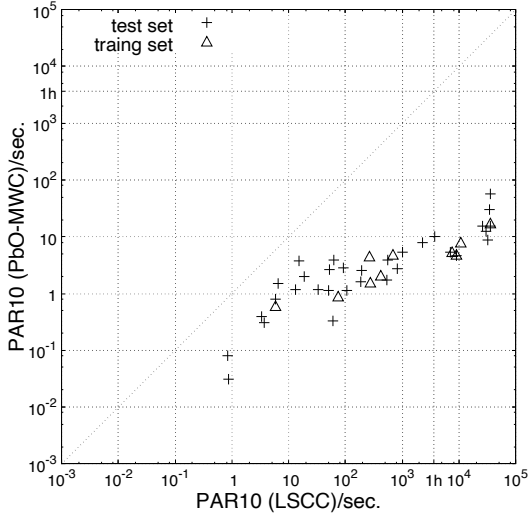
Benchmark	Num	PbO-MWC <i>avgPAR10</i>	MN/TS <i>avgPAR10</i>	LSCC <i>avgPAR10</i>	LSCC+BMS <i>avgPAR10</i>	RRWL <i>avgPAR10</i>	TSM-MWC <i>avgPAR10</i>
BHOSLIB	40	228.682	7234.972	18707.556	19151.201	18743.424	32519.003
DIMACS	80	903.982	1379.709	1885.051	1897.256	1770.183	5113.066
KES	42	6.154	16728.550	6728.632	8526.514	10163.870	20723.301
REF	29	3.170	872.675	8423.623	8000.062	10168.337	27320.371



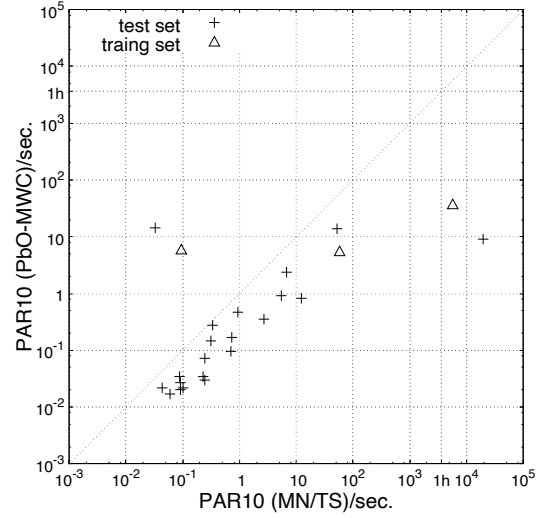
(a) Scatter plots corresponding to the performance comparison between PbO-MWC and MN/TS on BHOSLIB.



(b) Scatter plots corresponding to the performance comparison between PbO-MWC and MN/TS on DIMACS.



(c) Scatter plots corresponding to the performance comparison between PbO-MWC and LSCC on KES.



(d) Scatter plots corresponding to the performance comparison between PbO-MWC and MN/TS on REF.

Figure 1: Scatter plots of PAR10 between PbO-MWC and the best competitor on four benchmarks. (1h (3600 seconds) is the cutoff time of each run.)