Table 1: Results of HHSA and CASA on real-world benchmarks. The cutoff time is set to 5 hours

Instance	HHSA (2-way)		HHSA (3-way)		CASA (2-way)		CASA (3-way)		CASA (4-way)	
	min (avg)	time	min (avg)	time	min	time	min (avg)	time	min (avg)	time
Apache	30 (31.6)	371.27	N/A	N/A	32 (34.6)	4.12	186 (188.8)	15788.9	N/A	N/A
Bugzilla	16 (16.1)	9.3	58 (61.7)	648.06	16 (16.4)	0.11	61 (64.6)	36.35	197 (213.4)	12117.9
Gcc	18 (18.6)	289.51	N/A	N/A	19 (22.1)	76.28	93 (101.4)	10020.6	N/A	N/A
Spins	19 (19)	15.98	81 (87.4)	92.02	19 (19.8)	0.15	94 (100.5)	7.01	349 (357.1)	7720.42
Spinv	31 (31.3)	109.92	201 (208.8)	6173.59	36 (40.2)	3.16	216 (227.3)	1626.89	1728 (1761)	17631.3
Tcas	100 (100)	12.63	400 (400)	338.99	100 (100)	0.01	400 (404.1)	4.36	1207 (1222.2)	6115.11
Banking1	13 (13)	17.87	45 (45)	9.55	13 (13.2)	< 0.01	45 (46.2)	0.07	139 (142.3)	0.02
Banking2	10 (10.1)	< 0.01	30 (30)	1.25	10 (10.1)	< 0.01	30 (30.4)	0.23	74 (77.4)	37.34
CommProtocol	16 (16)	69.29	41 (41)	83.73	16 (16)	0.01	41 (42.2)	0.25	84 (85.1)	2.63
Concurrency	5 (5)	< 0.01	8 (8)	7.57	5 (5)	< 0.01	8 (8)	< 0.01	8 (8)	< 0.01
Healthcare1	30 (30)	5.46	96 (96)	56.48	30 (30.1)	< 0.01	96 (96.6)	0.27	301 (303.4)	6.93
Healthcare2	14 (14)	10.54	52 (52.6)	19.2	14 (14.9)	0.01	53 (55.1)	6.21	184 (187.4)	146.79
Healthcare3	34 (34)	20.86	177 (186.5)	451.71	34 (35.5)	0.21	170 (174.9)	356.46	916 (944.2)	15647.1
Healthcare4	46 (46)	21.17	296 (313.2)	2209.6	46 (47)	0.56	267 (277.4)	5911.45	2075 (2144.7)	17494.6
Insurance	527 (527)	149.48	N/A	N/A	527 (540.3)	3.84	6851 (7030)	2224.68	77929 (78727.3)	17463.4
NetworkMgmt	110 (110)	12.07	1100 (1100)	442.19	110 (116.3)	0.94	1124 (1136.8)	5.91	5748 (5852)	2101.62
ProcessorComm1	22 (22.1)	4.56	114 (117.2)	99.66	22 (24.1)	0.57	117 (120.7)	113.54	536 (543.1)	11585.6
ProcessorComm2	25 (25.6)	23.5	140 (147.5)	533.69	26 (27.7)	0.24	140 (145)	236.15	696 (709.6)	16630.3
Services	100 (100)	30.57	818 (826.6)	1797.32	102 (104.8)	1.11	838 (890.5)	1990.48	6584 (6678.8)	7413.19
Storage1	17 (17)	32.73	25 (25)	15.36	17 (17.1)	< 0.01	25 (25)	< 0.01	25 (25)	0.02
Storage2	18 (18)	11.1	54 (54)	16.5	18 (18)	< 0.01	54 (55.8)	0.01	162 (163.6)	0.18
Storage3	50 (50)	13.77	224 (224.4)	781.23	50 (51.6)	0.03	241 (245.8)	1.91	1085 (1085)	41.68
Storage4	130 (130)	16.4	910 (910.2)	1410.9	130 (130.5)	0.56	921 (945.9)	2496.51	7752 (8009.2)	17584.6
Storage5	215 (215)	127.88	1760 (1760)	16669.5	215 (221.3)	13.59	1732 (1749.8)	9591.14	18295 (18510.2)	17801.6
SystemMgmt	15 (15)	3.73	45 (45)	11.71	15 (16.1)	< 0.01	47 (48.3)	0.25	136 (140)	7.23
Telecom	30 (30)	4.61	120 (120)	12.8	30 (30.2)	< 0.01	120 (120.4)	0.38	365 (365.4)	22.66