

Constraints (pairs) - Optimal

#	G	% Obs	O	G*	$\delta_{HC}(P, S)$					$\delta_{HC}(P, S)$					$\delta_{HC}(L, S)$					$\delta_{HC}(L, S)$					$\delta_{HC}(L, P)$					$\delta_{HC}(L, P)$				
					Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S
BLOCKS (950)	20.3	10	1.25	8.0	9.746	0.44	0.24	0.32	86.1	7.53	9.746	0.44	0.25	0.32	86.1	7.56	4.725	0.45	0.26	0.3	88.9	8.03	5.842	0.45	0.26	0.3	88.9	8.03	4.723	0.41	0.26	0.33	83.3	6.83
		30	3.08	3.97	10.426	0.47	0.14	0.38	80.6	2.53	7.653	0.42	0.27	0.31	86.1	4.97	4.646	0.43	0.17	0.4	77.8	2.53	4.525	0.4	0.27	0.34	80.6	4.61	4.731	0.47	0.18	0.35	83.3	2.94
		50	4.42	2.5	9.876	0.59	0.21	0.2	88.9	3.03	6.383	0.52	0.29	0.19	88.9	3.83	4.647	0.55	0.26	0.19	88.9	3.28	4.494	0.49	0.33	0.18	88.9	4.92	4.726	0.58	0.22	0.2	80.6	2.72
		70	6.67	1.94	9.96	0.85	0.05	0.1	97.2	1.83	6.385	0.76	0.14	0.1	97.2	2.42	4.64	0.75	0.15	0.1	97.2	2.08	4.52	0.66	0.24	0.1	97.2	2.67	4.734	0.81	0.12	0.07	91.7	2.06
		100	8.83	1.83	10.139	0.92	0.0	0.08	100.0	1.67	6.384	0.92	0.0	0.08	100.0	1.67	4.651	0.82	0.1	0.08	100.0	1.92	4.496	0.82	0.1	0.08	100.0	1.92	4.721	0.88	0.08	0.04	91.7	1.92
IPC-GRID (1248)	7.5	10	1.63	2.71	12.096	0.68	0.11	0.21	72.9	2.44	8.054	0.67	0.12	0.21	75.0	2.73	7.634	0.87	0.05	0.08	93.8	2.67	5.024	0.88	0.05	0.07	95.8	2.69	7.784	0.92	0.08	0.0	100.0	3.1
		30	4.0	1.21	10.595	0.78	0.11	0.11	93.8	1.44	7.095	0.81	0.16	0.04	95.8	1.94	7.566	0.93	0.02	0.05	95.8	1.15	5.074	0.94	0.02	0.04	97.9	1.17	5.934	0.97	0.02	0.01	97.9	1.23
		50	6.19	1.13	8.994	0.9	0.03	0.07	93.8	1.06	5.959	0.86	0.1	0.05	97.9	1.6	7.609	0.96	0.01	0.03	97.9	1.08	5.023	0.96	0.01	0.03	97.9	1.08	5.926	0.97	0.01	0.02	97.9	1.1
		70	8.69	1.04	7.987	0.95	0.03	0.02	97.9	1.13	5.423	0.92	0.07	0.01	100.0	1.35	7.683	0.97	0.02	0.01	97.9	1.06	5.079	0.97	0.02	0.01	97.9	1.06	5.922	0.97	0.02	0.01	97.9	1.06
		100	11.88	1.0	7.986	1.0	0.0	0.0	100.0	1.0	5.263	1.0	0.0	0.0	100.0	1.0	7.621	1.0	0.0	0.0	100.0	1.0	5.128	1.0	0.0	0.0	100.0	1.0	5.954	1.0	0.0	0.0	100.0	1.0
LOGISTICS (950)	10.0	10	2.0	2.83	13.621	0.73	0.23	0.04	97.2	3.75	8.862	0.73	0.23	0.04	97.2	3.75	10.146	0.9	0.1	0.0	100.0	3.56	7.04	0.9	0.1	0.0	100.0	3.56	9.034	0.86	0.13	0.0	100.0	3.67
		30	5.75	1.19	13.604	0.79	0.21	0.0	100.0	1.89	8.84	0.75	0.25	0.0	100.0	2.03	9.046	0.92	0.08	0.0	100.0	1.44	5.998	0.92	0.08	0.0	100.0	1.44	9.042	0.88	0.12	0.0	100.0	1.56
		50	9.42	1.06	13.578	0.92	0.08	0.0	100.0	1.28	8.919	0.89	0.11	0.0	100.0	1.33	8.965	0.96	0.04	0.0	100.0	1.17	6.013	0.96	0.04	0.0	100.0	1.17	9.066	0.91	0.09	0.0	100.0	1.28
		70	13.25	1.03	12.378	0.99	0.01	0.0	100.0	1.06	8.464	0.99	0.01	0.0	100.0	1.06	9.038	1.0	0.0	0.0	100.0	1.03	6.007	1.0	0.0	0.0	100.0	1.03	8.982	0.96	0.04	0.0	100.0	1.11
		100	18.17	1.0	11.229	1.0	0.0	0.0	100.0	1.0	7.309	1.0	0.0	0.0	100.0	1.0	9.044	1.0	0.0	0.0	100.0	1.0	6.087	1.0	0.0	0.0	100.0	1.0	8.95	1.0	0.0	0.0	100.0	1.0
MICRONIC (950)	6.0	10	2.0	2.53	8.584	0.73	0.27	0.0	100.0	3.78	5.635	0.73	0.27	0.0	100.0	3.78	8.535	0.89	0.11	0.0	100.0	2.97	5.522	0.89	0.11	0.0	100.0	2.97	8.651	0.8	0.2	0.0	100.0	3.39
		30	5.42	1.22	8.569	0.63	0.37	0.0	100.0	2.25	5.618	0.42	0.58	0.0	100.0	3.64	8.518	0.95	0.05	0.0	100.0	1.36	5.609	0.95	0.05	0.0	100.0	1.36	8.535	0.77	0.23	0.0	100.0	1.78
		50	8.42	1.06	8.584	0.81	0.19	0.0	100.0	1.5	5.653	0.54	0.46	0.0	100.0	2.97	8.537	0.97	0.03	0.0	100.0	1.11	5.681	0.97	0.03	0.0	100.0	1.11	8.608	0.9	0.1	0.0	100.0	1.28
		70	11.92	1.0	8.581	0.91	0.09	0.0	100.0	1.19	5.631	0.76	0.24	0.0	100.0	1.56	8.593	0.98	0.02	0.0	100.0	1.06	5.71	0.98	0.02	0.0	100.0	1.06	8.54	0.97	0.03	0.0	100.0	1.08
		100	16.33	1.0	8.554	1.0	0.0	0.0	100.0	1.0	5.574	1.0	0.0	0.0	100.0	1.0	8.483	1.0	0.0	0.0	100.0	1.0	5.726	1.0	0.0	0.0	100.0	1.0	8.555	1.0	0.0	0.0	100.0	1.0
ROVERS (950)	6.0	10	1.67	2.28	9.287	0.63	0.33	0.04	94.4	3.86	6.158	0.59	0.37	0.04	94.4	4.28	9.329	0.83	0.13	0.04	97.2	2.75	6.136	0.83	0.13	0.04	97.2	2.75	9.259	0.78	0.14	0.08	91.7	2.64
		30	3.67	1.31	9.305	0.8	0.2	0.0	100.0	1.94	6.138	0.44	0.56	0.0	100.0	3.86	9.269	0.94	0.06	0.0	100.0	1.44	6.103	0.94	0.06	0.0	100.0	1.44	9.287	0.91	0.09	0.0	100.0	1.53
		50	5.75	1.19	9.277	0.93	0.07	0.0	100.0	1.36	6.221	0.64	0.36	0.0	100.0	2.47	9.249	0.92	0.01	0.07	88.9	1.08	6.108	0.92	0.01	0.07	88.9	1.08	9.189	0.94	0.03	0.03	97.2	1.19
		70	8.17	1.0	9.322	1.0	0.0	0.0	100.0	1.0	6.136	0.91	0.09	0.0	100.0	1.19	9.233	0.99	0.01	0.0	100.0	1.03	6.112	0.99	0.01	0.0	100.0	1.03	7.726	0.99	0.01	0.0	100.0	1.03
		100	10.83	1.0	9.203	1.0	0.0	0.0	100.0	1.0	6.174	1.0	0.0	0.0	100.0	1.0	9.25	1.0	0.0	0.0	100.0	1.0	6.131	1.0	0.0	0.0	100.0	1.0	7.668	1.0	0.0	0.0	100.0	1.0
SOMBRAN (950)	8.7	10	2.33	2.11	14.774	0.31	0.24	0.45	33.3	1.33	10.075	0.3	0.28	0.42	38.9	1.64	11.571	0.39	0.31	0.3	52.8	2.08	6.993	0.38	0.38	0.25	61.1	2.94	6.317	0.34	0.53	0.13	75.0	4.97
		30	6.5	1.25	14.532	0.59	0.22	0.19	66.7	1.31	9.968	0.59	0.39	0.02	97.2	2.83	9.358	0.75	0.13	0.13	80.6	1.25	6.245	0.64	0.3	0.06	91.7	2.06	6.243	0.38	0.45	0.17	66.7	2.22
		50	10.33	1.22	14.447	0.82	0.09	0.09	88.9	1.25	9.768	0.75	0.22	0.03	100.0	2.9	9.265	0.92	0.03	0.05	100.0	1.19	6.267	0.83	0.12	0.05	100.0	1.39	6.292	0.49	0.32	0.19	69.4	1.58
		70	14.67	1.03	14.335	0.93	0.06	0.01	100.0	1.14	9.77	0.9	0.1	0.0	100.0	1.31	7.36	0.99	0.0	0.01	100.0	1.0	5.164	0.94	0.04	0.01	100.0	1.08	6.27	0.62	0.29	0.09	80.6	1.58
		100	20.17	1.0	14.403	0.96	0.04	0.0	100.0	1.08	9.726	0.96	0.04	0.0	100.0	1.08	6.048	1.0	0.0	0.0	100.0	1.0	4.373	1.0	0.0	0.0	100.0	1.0	6.212	0.81	0.15	0.04	91.7	1.33
Average					10.971	0.8	0.12	0.08	93.06	1.92	7.299	0.74	0.2	0.06	95.16	2.43	8.027	0.87	0.07	0.06	95.25	1.81	5.606	0.85	0.09	0.05	96.13	2.02	7.219	0.81	0.13	0.06	93.22	2.01

Table 1: Results for each pair of constraint sets, for optimal observations. L for Landmarks, P for Post-hoc, and S for State equation.

Constraints (pairs) - Suboptimal

#	G	% Obs	O	G*	$\delta_{HC}(P, S)$					$\delta_{HC}(P, S)$					$\delta_{HC}(L, S)$					$\delta_{HC}(L, S)$					$\delta_{HC}(L, P)$					$\delta_{HC}(L, P)$								
					Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S	Time	AR	FPR	FNR	Acc	S				
BLOCKS (950)	20.3	10	1.42	7.61	14.696	0.41	0.24	0.35	86.1	6.83	9.715	0.42	0.25	0.33	88.9	7.39	4.683	0.44	0.28	0.28	94.4	8.31	5.816	0.44	0.28	0.28	94.4	8.44	4.729	0.39	0.28	0.33	94.4	6.92				
		30	3.83	3.58	10.419	0.49	0.2	0.31	77.8	3.14	7.571	0.35	0.4	0.25	86.1	6.94	4.654	0.5	0.23	0.27	83.3	3.75	4.54	0.34	0.42	0.24	86.1	7.17	4.72	0.44	0.32	0.24	80.6	3.97				
		50	5.92	3.19	9.99	0.55	0.21	0.24	86.1	3.08	6.382	0.42		0.18	94.4	5.61	4.646	0.5	0.25	0.25	86.1	3.24	4.519	0.42	0.41	0.18	94.4	5.92	4.725	0.57	0.22	0.18	80.6	2.73				
		70	8.5	2.53	10.044	0.71	0.08	0.21	91.7	2.06	6.384	0.56	0.28	0.17	94.4	3.06	4.642	0.64	0.17	0.19	97.2	2.36	4.54	0.55	0.31	0.14	100.0	3.19	4.722	0.69	0.13	0.18	88.9	2.31				
		100	11.83	2.25	10.012	0.84	0.0	0.16	100.0	1.67	6.386	0.84	0.0	0.16	100.0	1.67	4.652	0.74	0.1	0.16	100.0	1.92	4.621	0.74	0.1	0.16	100.0	1.92	4.719	0.79	0.08	0.12	91.7	1.92				
PC-GRAD (1240)	7.5	10	2.06	1.58	12.058	0.63	0.21	0.16	81.3	1.97	7.975	0.59	0.34	0.07	91.7	3.19	7.614	0.76	0.14	0.1	89.6	1.79	5.066	0.74	0.17	0.07	95.8	2.38	4.780	0.86	0.14	0	100.0	2.0				
		30	5.56	1.4	10.665	0.71	0.12	0.17	95.4	1.31	7.069	0.65	0.33	0.02	100.0	3.46	7.593	0.82	0.06	0.12	93.8	1.13	5.026	0.77	0.16	0.07	97.9	1.6	5.999	0.88	0.05	0.07	100.0	1.21				
		50	8.88	1.35	9.886	0.87	0.03	0.1	85.8	1.04	5.973	0.72	0.25	0.03	97.9	2.06	7.589	0.84	0.06	0.09	93.8	1.13	5.019	0.84	0.14	0.02	100.0	1.56	6.011	0.89	0.04	0.07	97.9	1.13				
		70	12.56	1.31	8.048	0.89	0.02	0.09	97.9	1.02	5.371	0.79	0.16	0.06	97.9	1.48	7.597	0.89	0.04	0.07	100.0	1.1	4.981	0.85	0.09	0.06	100.0	1.23	5.995	0.91	0.02	0.07	100.0	1.06				
		100	17.25	1.5	8.066	0.94	0.0	0.06	100.0	1.0	5.332	0.94	0.0	0.06	100.0	1.0	7.646	0.94	0.0	0.06	100.0	1.0	5.041	0.94	0.0	0.06	100.0	1.0	5.842	0.94	0.0	0.06	100.0	1.0				
LOGISTICS (950)	10.0	10	2.67	2.0	13.58	0.82	0.18	0.0	100.0	2.81	8.909	0.77	0.23	0.0	100.0	3.19	10.174	0.83	0.17	0.0	100.0	2.81	7.009	0.79	0.21	0.0	100.0	3.08	9.057	0.84	0.16	0.01	100.0	2.67				
		30	7.5	1.14	13.53	0.83	0.17	0.0	100.0	1.53	8.948	0.77	0.3	0.0	100.0	2.17	9.049	0.9	0.1	0.0	100.0	1.36	6.079	0.72	0.28	0.0	100.0	2.61	9.047	0.88	0.13	0.0	100.0	1.42				
		50	11.92	1.06	13.493	0.87	0.13	0.0	100.0	1.33	8.851	0.79	0.21	0.0	100.0	1.81	8.994	0.93	0.07	0.0	100.0	1.22	6.098	0.81	0.19	0.0	100.0	1.69	8.984	0.91	0.09	0.0	100.0	1.25				
		70	16.67	1.03	12.385	0.96	0.04	0.0	100.0	1.11	8.362	0.78	0.12	0.0	100.0	1.28	9.03	0.99	0.01	0.0	100.0	1.06	6.203	0.91	0.09	0.0	100.0	1.22	9.062	0.99	0.01	0.0	100.0	1.06				
		100	23.17	1.0	11.328	1.0	0.0	0.0	100.0	1.0	7.497	1.0	0.0	0.0	100.0	1.0	9.046	1.0	0.0	0.0	100.0	1.0	5.911	1.0	0.0	0.0	100.0	1.0	8.844	1.0	0.0	0.0	100.0	1.0				
MICRONC (950)	6.0	10	3.0	1.83	8.563	0.54	0.46	0.0	100.0	3.94	5.596	0.49	0.51	0.0	100.0	4.56	8.527	0.76	0.24	0.0	100.0	2.67	6.088	0.74	0.26	0.0	100.0	3.0	8.519	0.68	0.32	0.0	100.0	3.14				
		30	7.67	1.25	8.496	0.6	0.39	0.01	100.0	2.42	5.716	0.29	0.71	0.0	100.0	5.11	8.55	0.89	0.1	0.01	100.0	1.47	5.647	0.65	0.35	0.0	100.0	2.5	8.623	0.77	0.22	0.01	100.0	1.78				
		50	12.25	1.03	8.621	0.88	0.18	0.0	100.0	1.31	5.625	0.33	0.67	0.0	100.0	4.11	8.522	0.98	0.02	0.0	100.0	1.08	5.642	0.82	0.18	0.0	100.0	1.5	8.615	0.97	0.03	0.0	100.0	1.11				
		70	17.33	1.0	8.57	0.94	0.06	0.0	100.0	1.11	5.636	0.54	0.46	0.0	100.0	2.72	8.514	0.99	0.01	0.0	100.0	1.03	5.618	0.9	0.1	0.0	100.0	1.31	8.631	0.99	0.01	0.0	100.0	1.03				
		100	24.0	1.0	8.581	1.0	0.0	0.0	100.0	1.0	5.651	1.0	0.0	0.0	100.0	1.0	8.416	1.0	0.0	0.0	100.0	1.0	5.701	1.0	0.0	0.0	100.0	1.0	8.562	1.0	0.0	0.0	100.0	1.0				
ROTTER (950)	6.0	10	1.83	2.39	9.254	0.65	0.33	0.02	97.2	4.11	6.106	0.6	0.38	0.02	97.2	4.5	9.228	0.83	0.13	0.04	88.9	2.89	6.153	0.83	0.13	0.04	88.9	2.89	9.313	0.79	0.17	0.03	94.4	3.14				
		30	4.5	1.39	9.239	0.76	0.24	0.0	100.0	2.19	6.151	0.43	0.57	0.0	100.0	4.33	9.316	0.88	0.06	0.08	100.0	3.19	6.062	0.81	0.14	0.06	88.9	2.19	9.341	0.86	0.11	0.03	100.0	1.61				
		50	7.17	1.11	9.345	0.94	0.06	0.0	100.0	1.28	6.177	0.45	0.55	0.0	100.0	3.47	9.24	0.93	0.04	0.03	94.4	1.14	6.07	0.86	0.11	0.03	94.4	1.33	8.219	0.89	0.0	0.01	100.0	1.08				
		70	10.0	1.06	9.286	0.93	0.07	0.0	100.0	1.25	6.134	0.68	0.32	0.0	100.0	2.14	9.266	0.94	0.03	0.03	94.4	1.08	6.112	0.92	0.07	0.01	97.2	1.22	7.724	0.98	0.02	0.0	100.0	1.11				
		100	13.67	1.0	9.322	1.0	0.0	0.0	100.0	1.0	6.144	1.0	0.0	0.0	100.0	1.0	9.206	1.0	0.0	0.0	100.0	1.0	6.188	1.0	0.0	0.0	100.0	1.0	7.635	1.0	0.0	0.0	100.0	1.0				
SIOGHAN (950)	8.7	10	3.33	1.83	14.882	0.26	0.25	0.39	38.9	1.44	10.240	0.35	0.35	0.3	52.8	2.64	11.292	0.52	0.23	0.26	6.1	1.78	6.818	0.44	0.38	0.18	72.2	3.17	6.234	0.25	0.51	0.23	58.3	3.67				
		30	8.67	1.28	14.589	0.68	0.13	0.19	72.2	1.11	9.973	0.53	0.45	0.02	97.2	3.28	9.322	0.77	0.05	0.15	83.3	1.08	6.25	0.62	0.33	0.03	97.2	3.17	6.293	0.37	0.42	0.2	63.9	2.44				
		50	13.75	1.33	14.496	0.79	0.07	0.14	80.6	1.17	9.844	0.58	0.4	0.01	100.0	3.25	9.277	0.77	0.06	0.14	91.7	1.17	6.172	0.66	0.31	0.03	100.0	2.58	6.263	0.41	0.35	0.24	6.1	1.78				
		70	19.33	1.36	14.512	0.85	0.03	0.13	100.0	1.19	10.082	0.82	0.13	0.04	100.0	1.69	7.724	0.8	0.02	0.18	97.2	0.3	5.005	0.85	0.07	0.08	100.0	1.39	6.335	0.51	0.31	0.18	83.3	1.92				
		100	27.0	1.33	14.772	0.88	0.0	0.13	100.0	1.08	9.703	0.88	0.0	0.13	100.0	1.08	6.002	0.83	0.0	0.17	100.0	1.0	4.376	0.83	0.0	0.17	100.0	1.0	5.914	0.72	0.12	0.17	91.7	1.33				
Average										10.481	0.78	0.13	93.03	1.88	7.316	0.65	0.29	0.06	96.62	3.01	7.999	0.82	0.09	0.09	94.61	1.8	5.59	0.76	0.18	0.06	96.92	2.41	7.216	0.78	0.18	0.08	92.89	1.96