

Box and Blocks Test Baseline I

Reference No / Version	B-BBT-1.1.0
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Adopted Protocol	Box and Blocks Test Protocol X (P-BBT-1.X.0) (all protocols)
Score	

	Score	Dist. (m)	Planning (s)	Execution (s)	Total (s)
Protocol I: Modified BBT					
1	16	31.82	64.97	172.87	256.98
2	16	28.29	41.63	180.18	239.79
3	16	27.19	61.82	173.21	253.97
4	16	29.59	45.32	170.25	234.07
5	16	28.07	44.59	168.93	231.97
Avg	16.00	28.99	51.66	173.09	243.36
Std	0.00	1.61	9.71	3.89	10.26
Protocol II: Targeted BBT					
1	2	42.3	41.27	221.95	274.21
2	2	44.12	59.89	224.47	295.37
3	4	44.42	48.26	217.6	227
4	1	43.32	45.47	221.86	279.81
5	0	43.57	52.48	222.81	283.24
Avg	1.80	43.54	49.47	221.74	281.90
Std	1.48	6.71	7.11	2.53	8.23

	Score	Blocks Picked	Pick Att.	Dist. (m)	Planning (s)	Execution (s)	Total (s)
Protocol IIIa: Timed Standard BBT							
1	5	8	5	8.48	3.06	44.26	60
2	5	7	5	7.77	3.53	54.74	60
3	4	7	5	11.02	3.14	47.87	60
4	5	6	5	9.2	7.11	44.04	60
5	5	9	5	7.59	4.71	55.09	60
Avg	4.80	7.40	5.00	8.81	4.31	49.29	60.00
Std	0.40	1.02	0.00	1.24	1.52	4.86	0.00
Protocol IIIb: Untimed Standard BBT							
1	36	61	52	100.97	159.12	629.81	1024.27
2	30	67	43	88.23	125	505.6	824.21
3	33	58	40	79.26	116.04	492.63	783.13
4	31	53	45	84.81	116.97	531.36	843.02
5	32	62	54	111.12	164.19	662.15	1084.5
Avg	32.40	60.20	46.80	92.99	136.26	564.31	911.83
Std	2.30	5.17	5.97	12.95	23.51	76.70	133.64

Description	A Barret WAM with a Yale Openhand Model T42 gripper was used to test protocols P-BBT-1.X.0 (all BBT protocols). The test setup was placed directly in front of the robot, with a support surface 12cm away from the base of the robot. For a detailed description of the setup, hardware, and software used, please refer to the original manuscript of this work.
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Box and Blocks Test Baseline II

Reference No / Version	B-BBT-1.1.0
Authors	Fadi Alladkani ² , Abhinav Gandhi ² , Berk Calli ² , Aaron Dollar ¹
Institution	¹ Yale University, ² Worcester Polytechnic Institute
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Adopted Protocol	Box and Blocks Test Protocol X (P-BBT-1.X.0) (all protocols)
Score	

	Score	Dist. (m)	Planning (s)	Execution (s)	Total (s)
Protocol I: Modified BBT					
1	16	33.16	7.75	205.7	245.04
2	11	22.13	6.48	189.86	221.29
3	16	29.97	8.15	214.6	254.87
4	15	34.43	8.05	237.44	277.81
5	14	34.39	6.8	206.68	240.69
Avg	14.40	30.82	7.45	210.86	247.94
Std	2.07	5.18	0.75	17.36	20.68
Protocol II: Targeted BBT					
1	14	50.9	9.3	301.2	340.5
2	13	51.4	10.2	286.1	327.9
3	12	39.8	8.3	240	274.2
4	13	36.7	9.5	267.4	306.3
5	13	41.4	8.2	251.5	286.7
Avg	13.00	44.00	9.10	269.31	307.10
Std	0.70	6.70	0.80	24.80	27.50

	Score	Blocks Picked	Pick Att.	Dist. (m)	Planning (s)	Execution (s)	Total (s)
Protocol IIIa: Timed Standard BBT							
1	3	3	4	10.89	1.74	50.53	60
2	2	2	4	8.74	1.88	50.15	60
3	3	3	4	6.35	1.96	48.27	60
4	4	4	5	7.79	1.83	50.97	60
5	2	4	4	7.43	1.95	49.23	60
Avg	2.80	3.20	4.20	8.24	1.87	49.83	60.00
Std	0.80	0.83	0.40	1.71	0.09	1.08	0.00
Protocol IIIb: Untimed Standard BBT							
1	9	9	14	28.9	6.83	176.15	215.06
2	11	11	33	68.165	15.57	475.39	556.8
3	6	6	14	20.48	13.7	193.02	233.12
4	6	6	11	26.65	8.2	254.83	296.14
5	6	6	7	15.538	3.96	114.25	166.49
Avg	7.60	7.60	8.60	31.95	9.65	248.73	293.52
Std	2.30	2.30	3.71	20.91	4.84	132.94	154.32

Description	A Franka Emika Panda with the standard gripper was used to test protocols P-BBT-1.X.0 (all BBT protocols). The test setup was placed directly in front of the robot, with a support surface 10cm away from the base of the robot. For a detailed description of the setup, hardware, and software used, please refer to the original manuscript of this work.
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