CROSS COMPARISON TABLE BETWEEN HYPOTHESES AND APPROACHES

			Path Planning Algorithm(s) and heuristics								Evaluation and evolution of an obstacle's "movable" characteristic and its associated cost					Object manipulation maneuver planning			Planning taking uncertainty into account					
			A*	ARA*	D* Lite	BFS	RRT	Standard Heuristic for Path Planning	Custom Heuristic for Path Planning	Supplementary Heuristics	"Movability" (re)evaluated on runtime	Manipulation cost depends on the obstacle's physics metadata	Manipulation cost depends on a constant common to all obstacles	Cost is estimated on runtime	Cost is pre-estimated by a heuristic	Kinematic/Friction constraints taken into account	Limited grasping points number	No concern about grasping points	Adaptive obstacle approach procedures	Use of a Kalman filter	Use of e-shadows	Use of PRM + MDP + MonteCarlo	Use of PBRL	Pointcloud correction
			[34], [31], [29], [28], [Prop]	[10]	[11], [7]	[29]	[23], [16], [15], [4]	***[34], [31], [28], [11], [10], [Prop]***	[29]	***[34], [31], [29], [26], [16], [11], [10], [7], [4], [Prop]***	***[26], [23], [16], [15], [11], [10], [7], [4], [Prop]***	[35], [34], [31]	***[28], [11], [Prop]***	[10], [7]	[11]	[31], [15], [4]	***[36], [34], [31], [28], [26], [23], [16], [15], [4], [Prop]***	[10], [7]	[31], [15], [15], [10], [7], [4]	[16], [10], [7]	[16]	[15], [4]	[4]	[23]
Knowledge of the environment	2D metric map	***[34], [29], [28],[15], [11], [4], [Prop]***	***[28] [29] [34] [Prop]***		[11]	[29]	[4] [15]	***[11] [28] [34] [Prop]***	[29]	***[4] [11] [28] [29] [34] [Prop]***	***[4] [11] [15] [26] [Prop]***	[34]	***[11] [26] [Prop]***		[11]	[4] [15]	***[4] [15] [28] [29] [34] [Prop]***		[4] [15]			[4] [15]	[4]	
	2D costmap	[10], [7]		[10]	[7]			[10]		[7] [10]	[7] [10]			[7] [10]				[7] [10]	[7] [10]	[7] [10]				
	3D metric map	[35], [31], [23], [16]	[31]				[16] [23]	[31]		[16] [31]	[16] [23]	[31] [35]				[31]	[16] [23] [31] [35]		[16] [31]	[16]	[16]			[23]
	Complete	[35], [34], [29], [15], [4]	[29] [34]			[29]	[4] [15]	[34]	[29]	[4] [29] [34]	[4] [15]	[34] [35]				[4] [15]	[4] [15] [29] [34] [35]		[4] [15]			[4] [15]	[4]	
	Partial	***[31], [16], [Prop]***	***[31] [Prop]***				[16]	***[31] [Prop]***		***[16] [31] [Prop]***	***[16] [Prop]***	[31]	***[Prop]***			[31]	***[16] [31] [Prop]***		[16] [31]	[16]	[16]			
	Unknown	[25], [11], [23], [10], [7]	[25]	[10]	[7] [11]		[23]	[10] [11] [25]		[7] [10] [11] [25]	[7] [10] [11] [23] [25]		[11] [25]	[7] [10]	[11]		[23] [25]	[7] [10]	[7] [10]	[7] [10]				[23]
	Perfect data	***[35], [34], [29], [28], [11], [Prop]***	***[28] [29] [34] [Prop]***		[11]	[29]		***[11] [28] [34] [Prop]***	[29]	***[11] [28] [29] [34] [Prop]***	***[11] [28] [Prop]***	[34] [35]	***[11] [28] [Prop]***		[11]		***[28] [29] [34] [35] [Prop]***							
	Approximative data	[31], [23], [16], [15], [10], [7], [4]	[31]	[10]	[7]		[4] [15] [16] [23]	[10] [31]		[4] [7] [10] [16] [31]	[4] [7] [10] [15] [16] [23]	[31]		[7] [10]		[4] [15] [31]	[4] [15] [16] [23] [31]	[7] [10]	[4] [7] [10] [15] [16] [31]	[7] [10] [16]	[16]	[4] [15]	[4]	[23]
	Free unknown space hypothesis	***[28], [23], [11], [10], [7], [Prop]***	***[28] [Prop]***	[10]	[7] [11]		[23]	***[10] [11] [28] [Prop]***		***[7] [10] [11] [28] [Prop]***	***[7] [10] [11] [23] [28] [Prop]***		***[11] [28] [Prop]***	[7] [10]	[11]		***[23] [28] [Prop]***	[7] [10]	[7] [10]	[7] [10]				[23]
Obstacle characteristics	Naive 2D projection	[35], [34], [25], [16], [15], [11], [4]	[25] [34]		[11]		[4] [15] [16]	[11] [25] [34]		[4] [11] [16] [25] [34]	[4] [11] [15] [16] [25]	[34] [35]	[11] [25]		[11]	[4] [15]	[4] [15] [16] [25] [34] [35]		[4] [15] [16]	[16]	[16]	[4] [15]	[4]	
	2D Projection using Convex-Hull	***[31], [29], [23], [Prop]***	***[29] [31] [Prop]***			[29]	[23]	***[31] [Prop]***	[29]	***[29] [31] [Prop]***	***[23] [Prop]***	[31]	***[Prop]***			[31]	***[23] [29] [31] [Prop]***		[31]					[23]
	Any obstacle types	[23], [16], [15], [11], [10], [7], [4]		[10]	[7] [11]		[4] [15] [16] [23]	[10] [11]		[4] [7] [10] [11] [16]	[4] [7] [10] [11] [15] [16] [23]		[11]	[7] [10]	[11]	[4] [15]	[4] [15] [16] [23]	[7] [10]	[4] [7] [10] [15] [16]	[7] [10] [16]	[16]	[4] [15]	[4]	[23]
	Only polygonal obstacles	***[35], [34], [31], [29], [Prop]***	***[29] [31] [34] [Prop]***			[29]		***[31] [34] [Prop]***	[29]	***[29] [31] [34] [Prop]***	***[Prop]***	[31] [34] [35]	***[Prop]***			[31]	***[29] [31] [34] [35] [Prop]***		[31]					
	Only rectangular obstacles	[25]	[25]					[25]		[25]	[25]		[25]				[25]							
	Human obstacle																							
	Moving obstacle	***[7], [Prop]***	***[Prop]***		[7]			***[Prop]***		***[7] [Prop]***	***[7] [Prop]***		***[Prop]***	[7]			***[Prop]***	[7]	[7]	[7]				
	Metadata on obstacle's physics	[35], [34], [31], [29], [15]	[29] [31] [34]			[29]	[15]	[31] [34]	[29]	[29] [31] [34]	[15]	[31] [34] [35]				[15] [31]	[15] [29] [31] [34] [35]		[15] [31]			[15]		
	Obstacle can be translated in 2D plane	***[35], [34], [31], [29], [28], [23], [16], [15], [11], [10], [7], [4], [Prop]***	***[28] [29] [31] [34] [Prop]***	[10]	[7] [11]	[29]	[4] [15] [16] [23]	***[10] [11] [28] [31] [34] [Prop]***	[29]	***[4] [7] [10] [11] [16] [28] [31] [34] [Prop]***	***[4] [7] [10] [11] [15] [16] [23] [28] [35] [Prop]***	[31] [34] [35]	***[11] [28] [Prop]***	[7] [10]	[11]	[4] [15] [31]	***[4] [15] [16] [23] [28] [29] [31] [34] [35] [Prop]***	[7] [10]	[4] [7] [10] [15] [16] [31]	[7] [10] [16]	[16]	[4] [15]	[4]	[23]
	Translation limited to the 2D plane axes	[25]	[25]					[25]		[25]	[25]		[25]				[25]							
	Obstacle can be rotated in the normal to the 2D plane	[35], [34], [29], [16], [15], [4]	[29] [34]			[29]	[4] [15] [16]	[34]	[29]	[4] [16] [29] [34]	[4] [15] [16]	[34] [35]				[4] [15]	[4] [15] [16] [29] [34] [35]		[4] [15] [16]	[16]	[16]	[4] [15]	[4]	
Robot characteristics	HRP2 Robot	[35], [31], [23]	[31]				[23]	[31]		[31]	[23]	[31] [35]				[31]	[23] [31] [35]		[31]					[23]
	PR2 Robot	[16]					[16]			[16]	[16]						[16]		[16]	[16]	[16]			
	GOLEM Krang Robot	[15], [4]					[4] [15]			[4]	[4] [15]					[4] [15]	[4] [15]		[4] [15]			[4] [15]	[4]	
	Custom robot vehicle for MAGIC 2010 Competition	[10], [7]		[10]	[7]			[10]		[7] [10]	[7] [10]			[7] [10]				[7] [10]	[7] [10]	[7] [10]				
	Pepper Robot	***[Prop]***	***[Prop]***					***[Prop]***		***[Prop]***	***[Prop]***		***[Prop]***				***[Prop]***							
	Nondescript humanoid robot	[34], [29]	[29] [34]			[29]		[34]	[29]	[29] [34]		[34]					[29] [34]							
	Nondescript wheeled robot	[25], [11]	[25]		[11]			[11] [25]		[11] [25]	[11] [25]		[11] [25]		[11]		[25]							
	Limited field of vision	***[28], [23], [16], [11], [10], [7], [Prop]***	***[28] [Prop]***	[10]	[7] [11]		[16] [23]	***[10] [11] [28] [Prop]***		***[7] [10] [11] [16] [28] [Prop]***	***[7] [10] [11] [16] [23] [28] [Prop]***		***[11] [28] [Prop]***	[7] [10]	[11]		***[16] [23] [28] [Prop]***	[7] [10]	[7] [10] [16]	[7] [10] [16]	[16]			[23]
	Unlimited field of vision	[35], [34], [31], [29], [15], [4]	[29] [31] [34]			[29]	[4] [15]	[31] [34]	[29]	[4] [29] [31] [34]	[4] [15]	[31] [34] [35]				[4] [15] [31]	[4] [15] [29] [31] [34] [35]		[4] [15] [31]			[4] [15]	[4]	
	Robot can translate on the plane	***[35], [34], [31], [29], [28], [23], [16], [15], [11], [10], [7], [4], [Prop]***	***[28] [29] [31] [34] [Prop]***	[10]	[7] [11]	[29]	[4] [15] [16] [23]	***[10] [11] [28] [31] [34] [Prop]***	[29]	***[4] [7] [10] [11] [16] [28] [29] [31] [34] [Prop]***	***[4] [7] [10] [11] [15] [16] [23] [28] [35] [Prop]***	[31] [34] [35]	***[11] [28] [Prop]***	[7] [10]	[11]	[4] [15] [31]	***[4] [15] [16] [23] [28] [29] [31] [34] [35] [Prop]***	[7] [10]	[4] [7] [10] [15] [16] [31]	[7] [10] [16]	[16]	[4] [15]	[4]	[23]
	Robot can rotate in the plane	***[35], [34], [31], [29], [28], [23], [16], [15], [11], [10], [7], [4], [Prop]***	***[28] [29] [31] [34] [Prop]***	[10]	[7] [11]	[29]	[4] [15] [16] [23]	***[10] [11] [28] [31] [34] [Prop]***	[29]	***[4] [7] [10] [11] [16] [28] [29] [31] [34] [Prop]***	***[4] [7] [10] [11] [15] [16] [23] [28] [35] [Prop]***	[31] [34] [35]	***[11] [28] [Prop]***	[7] [10]	[11]	[4] [15] [31]	***[4] [15] [16] [23] [28] [29] [31] [34] [35] [Prop]***	[7] [10]	[4] [7] [10] [15] [16] [31]	[7] [10] [16]	[16]	[4] [15]	[4]	[23]
	Lift & Drop	[35]										[35]					[35]							
	Pull	[34], [31], [29], [16], [15], [11], [4]	[29] [31] [34]		[11]	[29]	[4] [15] [16]	[11] [31] [34]	[29]	[4] [11] [16] [29] [31] [34]	[4] [11] [15] [16]	[31] [34]	[11]		[11]	[4] [15] [31]	[4] [15] [16] [29] [31] [34]		[4] [15] [16] [31]	[16]	[16]	[4] [15]	[4]	
	Push	***[34], [31], [29], [28], [23], [16], [15], [11], [10], [7], [4], [Prop]***	***[28] [29] [31] [34] [Prop]***	[10]	[7] [11]	[29]	[4] [15] [16] [23]	***[10] [11] [28] [31] [34] [Prop]***	[29]	***[4] [7] [10] [11] [16] [28] [29] [31] [34] [Prop]***	***[4] [7] [10] [11] [15] [16] [23] [28] [35] [Prop]***	[31] [34]	***[11] [28] [Prop]***	[7] [10]	[11]	[4] [15] [31]	***[4] [15] [16] [23] [28] [29] [31] [34] [35] [Prop]***	[7] [10]	[4] [7] [10] [15] [16] [31]	[7] [10] [16]	[16]	[4] [15]	[4]	[23]
Problem class	L1	***[35], [34], [31], [28], [23], [16], [11], [10], [7], [4], [Prop]***	***[28] [31] [34] [Prop]***	[10]	[7] [11]		[4] [15] [23]	***[10] [11] [28] [31] [34] [Prop]***		***[4] [7] [10] [11] [28] [31] [34] [Prop]***	***[4] [7] [10] [11] [15] [23] [28] [35] [Prop]***	[31] [34] [35]	***[11] [28] [Prop]***	[7] [10]	[11]	[4] [15] [31]	***[4] [15] [16] [23] [28] [29] [31] [34] [35] [Prop]***	[7] [10]	[4] [7] [10] [15] [31]	[7] [10]		[4] [15]	[4]	[23]
	LkM	[29], [16]	[29]			[29]	[16]		[29]	[16] [29]	[16]						[16] [29]		[16]	[16]	[16]			

CROSS COMPARISON TABLE BETWEEN HYPOTHESES AND PERFORMANCE CRITERIA

			Evaluation in a simulated/real setting		Computation time	Optimality and completeness			Optimality target				Social acceptability	Number and Density of obstacles		
			Evaluation in a real-world setting	Evaluation in a simulation	Real time	Guaranteed Global Optimality	Guaranteed Local Optimality	Guaranteed Completeness	Energy optimality	Distance optimality	Time optimality	Other optimality	Mention of social norms/concerns	Maximal tested quantity of "movable obstacles" >= 20	Maximal tested quantity of "movable obstacles" < 20	Mention of the concept of obstacle density
			[31], [23], [16], [10], [7], [4]	***[35], [34], [29], [25], [15], [11], [Prop]***	***[34], [31], [29], [25], [23], [16], [11], [10], [7], [4], [Prop]***	[34], [15]	***[11], [Prop]***	[34], [31], [15]	[35], [34], [31], [25], [15], [11], [4]	***[35], [29], [23], [16], [7], [Prop]***	[15], [10], [7], [4]	***[34], [29], [23], [16], [15], [7], [Prop]***	***[34], [23], [Prop]***	[34], [25], [15], [11]	***[35], [31], [29], [23], [16], [10], [7], [4], [Prop]***	[25], [11]
Knowledge of the environment	2D metric map	***[34], [29], [25],[15], [11], [4], [Prop]***	[4]	***[11] [15] [25] [29] [34] [Prop]***	***[4] [11] [25] [29] [34] [Prop]***	[15] [34]	***[11] [Prop]***	[15] [34]	[4] [11] [15] [25] [34]	***[29] [Prop]***	[4] [15]	***[15] [29] [34] [Prop]***	***[34] [Prop]***	[11] [15] [25] [34]	***[4] [29] [Prop]***	[11] [25]
	2D costmap	[10], [7]	[7] [10]		[7] [10]					[7]	[7] [10]	[7]			[7] [10]	
	3D metric map	[35], [31], [23], [16]	[16] [23] [31]	[35]	[16] [23] [31]			[31]	[31] [35]	[16] [23] [35]		[16] [23]	[23]		[16] [23] [31] [35]	
	Complete	[35], [34], [29], [15], [4]	[4]	[15] [29] [34] [35]	[4] [29] [34]	[15] [34]		[15] [34]	[4] [15] [34] [35]	[29] [35]	[4] [15]	[15] [29] [34]	[34]	[15] [34]	[4] [29] [35]	
	Partial	***[31], [16], [Prop]***	[16] [31]	***[Prop]***	***[16] [31] [Prop]***		***[Prop]***	[31]	[31]	***[16] [Prop]***		***[16] [Prop]***	***[Prop]***		***[16] [31] [Prop]***	
	Unknown	[25], [11], [23], [10], [7]	[7] [10] [23]	[11] [25]	[7] [10] [11] [23] [25]		[11]		[11] [25]	[7] [23]	[7] [10]	[7] [23]	[23]	[11] [25]	[7] [10] [23]	[11] [25]
	Perfect data	***[35], [34], [29], [25], [11], [Prop]***		***[11] [25] [29] [34] [35] [Prop]***	***[11] [25] [29] [34] [Prop]***	[34]	***[11] [Prop]***	[34]	[11] [25] [34] [35]	***[29] [35] [Prop]***		***[29] [34] [Prop]***	***[34] [Prop]***	[11] [25] [34]	***[29] [35] [Prop]***	[11] [25]
	Approximative data	[31], [23], [16], [15], [10], [7], [4]	[4] [7] [10] [16] [23] [31]	[15]	[4] [7] [10] [16] [23] [31]	[15]		[15] [31]	[4] [15] [31]	[7] [16] [23]	[4] [7] [10] [15]	[7] [15] [16] [23]	[23]	[15]	[4] [7] [10] [16] [23] [31]	
	Free unknown space hypothesis	***[25], [23], [11], [10], [7], [Prop]***	[7] [10] [23]	***[11] [25] [Prop]***	***[7] [10] [11] [23] [25] [Prop]***		***[11] [Prop]***		[11] [25]	***[7] [23] [Prop]***	[7] [10]	***[7] [23] [Prop]***	***[23] [Prop]***	[11] [25]	***[7] [10] [23] [Prop]***	[11] [25]
Obstacle characteristics	Naive 2D projection	[35], [34], [25], [16], [15], [11], [4]	[4] [16]	[11] [15] [25] [34] [35]	[4] [11] [16] [25] [34]	[15] [34]	[11]	[15] [34]	[4] [11] [15] [25] [34] [35]	[16] [35]	[4] [15]	[15] [16] [34]	[34]	[11] [15] [25] [34]	[4] [16] [35]	[11] [25]
	2D Projection using Convex-Hull	***[31], [29], [23], [Prop]***	[23] [31]	***[29] [Prop]***	***[23] [29] [31] [Prop]***		***[Prop]***	[31]	[31]	***[23] [29] [Prop]***		***[23] [29] [Prop]***	***[23] [Prop]***		***[23] [29] [31] [Prop]***	
	Any obstacle types	[23], [16], [15], [11], [10], [7], [4]	[4] [7] [10] [16] [23]	[11] [15]	[4] [7] [10] [11] [16] [23]	[15]	[11]	[15]	[4] [11] [15]	[7] [16] [23]	[4] [7] [10] [15]	[7] [15] [16] [23]	[23]	[11] [15]	[4] [7] [10] [16] [23]	[11]
	Only polygonal obstacles	***[35], [34], [31], [29], [Prop]***	[31]	***[29] [34] [35] [Prop]***	***[29] [31] [34] [Prop]***	[34]	***[Prop]***	[31] [34]	[31] [34] [35]	***[29] [35] [Prop]***		***[29] [34] [Prop]***	***[34] [Prop]***	[34]	***[29] [31] [35] [Prop]***	
	Only rectangular obstacles	[25]		[25]	[25]				[25]					[25]		[25]
	Human obstacle															
	Moving obstacle	***[7], [Prop]***	[7]	***[Prop]***	***[7] [Prop]***		***[Prop]***			***[7] [Prop]***	[7]	***[7] [Prop]***	***[Prop]***		***[7] [Prop]***	
	Metadata on obstacle's physics	[35], [34], [31], [29], [15]	[31]	[15] [29] [34] [35]	[29] [31] [34]	[15] [34]		[15] [31] [34]	[15] [31] [34] [35]	[29] [35]	[15]	[15] [29] [34]	[34]	[15] [34]	[29] [31] [35]	
	Obstacle can be translated in 2D plane	***[35], [34], [31], [29], [25], [23], [16], [15], [11], [10], [7], [4], [Prop]***	[4] [7] [10] [16] [23] [31]	***[11] [15] [25] [29] [34] [35] [Prop]***	***[4] [7] [10] [11] [16] [23] [25] [29] [31] [34] [Prop]***	[15] [34]	***[11] [Prop]***	[15] [31] [34]	[4] [11] [15] [25] [31] [34] [35]	***[7] [16] [23] [29] [35] [Prop]***	[4] [7] [10] [15]	***[7] [15] [16] [23] [29] [34] [Prop]***	***[23] [34] [Prop]***	[11] [15] [25] [34]	***[4] [7] [10] [16] [23] [29] [31] [35] [Prop]***	[11] [25]
	Translation limited to the 2D plane axes	[25]		[25]	[25]				[25]					[25]		[25]
	Obstacle can be rotated in the normal to the 2D plane	[35], [34], [29], [16], [15], [4]	[4] [16]	[15] [29] [34] [35]	[4] [16] [29] [34]	[15] [34]		[15] [34]	[4] [15] [34] [35]	[16] [29] [35]	[4] [15]	[15] [16] [29] [34]	[34]	[15] [34]	[4] [16] [29] [35]	
Robot characteristics	HRP2 Robot	[35], [31], [23]	[23] [31]	[35]	[23] [31]			[31]	[31] [35]	[23] [35]		[23]	[23]		[23] [31] [35]	
	PR2 Robot	[16]	[16]		[16]					[16]		[16]			[16]	
	GOLEM Krang Robot	[15], [4]	[4]	[15]	[4]	[15]		[15]	[4] [15]		[4] [15]	[15]		[15]	[4]	
	Custom robot vehicle for MAGIC 2010 Competition	[10], [7]	[7] [10]		[7] [10]					[7]	[7] [10]	[7]			[7] [10]	
	Pepper Robot	***[Prop]***		***[Prop]***	***[Prop]***		***[Prop]***			***[Prop]***		***[Prop]***	***[Prop]***		***[Prop]***	
	Nondescript humanoid robot	[34], [29]		[29] [34]	[29] [34]	[34]		[34]	[34]	[29]		[29] [34]	[34]	[34]	[29]	
	Nondescript wheeled robot	[25], [11]		[11] [25]	[11] [25]		[11]		[11] [25]					[11] [25]		[11] [25]
	Limited field of vision	***[25], [23], [16], [11], [10], [7], [Prop]***	[7] [10] [16] [23]	***[11] [25] [Prop]***	***[7] [10] [11] [16] [23] [25] [Prop]***		***[11] [Prop]***		[11] [25]	***[7] [16] [23] [Prop]***	[7] [10]	***[7] [16] [23] [Prop]***	***[23] [Prop]***	[11] [25]	***[7] [10] [16] [23] [Prop]***	[11] [25]
	Unlimited field of vision	[35], [34], [31], [29], [15], [4]	[4] [31]	[15] [29] [34] [35]	[4] [29] [31] [34]	[15] [34]		[15] [31] [34]	[4] [15] [31] [34] [35]	[29] [35]	[4] [15]	[15] [29] [34]	[34]	[15] [34]	[4] [29] [31] [35]	
	Robot can translate on the plane	***[35], [34], [31], [29], [25], [23], [16], [15], [11], [10], [7], [4], [Prop]***	[4] [7] [10] [16] [23] [31]	***[11] [15] [25] [29] [34] [35] [Prop]***	***[4] [7] [10] [11] [16] [23] [25] [29] [31] [34] [Prop]***	[15] [34]	***[11] [Prop]***	[15] [31] [34]	[4] [11] [15] [25] [31] [34] [35]	***[7] [16] [23] [29] [35] [Prop]***	[4] [7] [10] [15]	***[7] [15] [16] [23] [29] [34] [Prop]***	***[23] [34] [Prop]***	[11] [15] [25] [34]	***[4] [7] [10] [16] [23] [29] [31] [35] [Prop]***	[11] [25]
	Robot can rotate in the plane	***[35], [34], [31], [29], [25], [23], [16], [15], [11], [10], [7], [4], [Prop]***	[4] [7] [10] [16] [23] [31]	***[11] [15] [25] [29] [34] [35] [Prop]***	***[4] [7] [10] [11] [16] [23] [25] [29] [31] [34] [Prop]***	[15] [34]	***[11] [Prop]***	[15] [31] [34]	[4] [11] [15] [25] [31] [34] [35]	***[7] [16] [23] [29] [35] [Prop]***	[4] [7] [10] [15]	***[7] [15] [16] [23] [29] [34] [Prop]***	***[23] [34] [Prop]***	[11] [15] [25] [34]	***[4] [7] [10] [16] [23] [29] [31] [35] [Prop]***	[11] [25]
	Lift & Drop	[35]		[35]					[35]	[35]					[35]	
	Pull	[34], [31], [29], [16], [15], [11], [4]	[4] [16] [31]	[11] [15] [29] [34]	[4] [11] [16] [29] [31] [34]	[15] [34]	[11]	[15] [31] [34]	[4] [11] [15] [31] [34]	[16] [29]	[4] [15]	[15] [16] [29] [34]	[34]	[11] [15] [34]	[4] [16] [29] [31]	[11]
	Push	***[34], [31], [29], [25], [23], [16], [15], [11], [10], [7], [4], [Prop]***	[4] [7] [10] [16] [23] [31]	***[11] [15] [25] [29] [34] [Prop]***	***[4] [7] [10] [11] [16] [23] [25] [29] [31] [34] [Prop]***	[15] [34]	***[11] [Prop]***	[15] [31] [34]	[4] [11] [15] [25] [31] [34]	***[7] [16] [23] [29] [Prop]***	[4] [7] [10] [15]	***[7] [15] [16] [23] [29] [34] [Prop]***	***[23] [34] [Prop]***	[11] [15] [25] [34]	***[4] [7] [10] [16] [23] [29] [31] [Prop]***	[11] [25]
Problem class	L1	***[35], [34], [31], [25], [23], [15], [11], [10], [7], [4], [Prop]***	[4] [7] [10] [23] [31]	***[11] [15] [25] [34] [35] [Prop]***	***[4] [7] [10] [11] [23] [25] [31] [34] [Prop]***	[15] [34]	***[11] [Prop]***	[15] [31] [34]	[4] [11] [15] [25] [31] [34] [35]	***[7] [23] [35] [Prop]***	[4] [7] [10] [15]	***[7] [15] [23] [34] [Prop]***	***[23] [34] [Prop]***	[11] [15] [25] [34]	***[4] [7] [10] [23] [31] [35] [Prop]***	[11] [25]
	LkM	[29], [16]	[16]	[29]	[16] [29]					[16] [29]		[16] [29]			[16] [29]	

CROSS COMPARISON TABLE BETWEEN PERFORMANCE CRITERIA AND APPROACHES

			Path Planning Algorithm(s) and heuristics								Evaluation and evolution of an obstacle's "movable" characteristic and its associated cost					Object manipulation maneuver planning			Planning taking uncertainty into account					
			A*	ARA*	D* Lite	BFS	RRT	Standard Heuristic for Path Planning	Custom Heuristic for Path Planning	Supplementary Heuristics	"Movability" (re)evaluated on runtime	Manipulation cost depends on the obstacle's physics metadata	Manipulation cost depends on a constant common to all obstacles	Cost is estimated on runtime	Cost is pre-estimated by a heuristic	Kinematic/Friction constraints taken into account	Limited grasping points number	No concern about grasping points	Adaptive obstacle approach procedures	Use of a Kalman filter	Use of e-shadows	Use of PRM + MDP + MonteCarlo	Use of PBRL	Pointcloud correction
			[34], [31], [29], [26], [Prop]	[10]	[11], [7]	[29]	[23], [16], [13], [4]	***[34], [31], [25], [11], [10], [Prop]***	[29]	***[34], [31], [20], [25], [16], [11], [10], [7], [4], [Prop]***	***[25], [23], [16], [15], [11], [10], [7], [4], [Prop]***	[35], [34], [31]	***[26], [11], [Prop]***	[10], [7]	[11]	[31], [15], [4]	***[35], [34], [31], [29], [26], [23], [16], [15], [4], [Prop]***	[10], [7]	[31], [16], [15], [10], [7], [4]	[16], [10], [7]	[16]	[15], [4]	[4]	[23]
Evaluation in a simulated/real setting	Evaluation in a real-world setting	[31], [23], [16], [10], [7], [4]	[31]	[10]	[7]		[4] [16] [23]	[10] [31]		[4] [7] [10] [16] [31]	[4] [7] [10] [16] [23]	[31]		[7] [10]		[4] [31]	[4] [16] [23] [31]	[7] [10]	[4] [7] [10] [16] [31]	[7] [10] [16]	[16]	[4]	[4]	[23]
	Evaluation in a simulation	***[35], [34], [29], [25], [15], [11], [Prop]***	***[26] [29] [34] [Prop]***		[11]	[29]	[15]	***[11] [25] [34] [Prop]***	[29]	***[11] [25] [29] [34] [Prop]***	***[11] [15] [25] [Prop]***	[34] [35]	***[11] [26] [Prop]***		[11]	[15]	***[15] [25] [29] [34] [35] [Prop]***		[15]			[15]		
Computation time	Real time	***[34], [31], [29], [25], [23], [16], [11], [10], [7], [4], [Prop]***	***[26] [29] [31] [34] [Prop]***	[10]	[7] [11]	[29]	[4] [16] [23]	***[10] [11] [25] [31] [34] [Prop]***	[29]	***[4] [7] [10] [11] [16] [25] [29] [31] [34] [Prop]***	***[4] [7] [10] [11] [16] [23] [26] [Prop]***	[31] [34]	***[11] [25] [Prop]***	[7] [10]	[11]	[4] [31]	***[4] [16] [23] [25] [29] [31] [34] [Prop]***	[7] [10]	[4] [7] [10] [16] [31]	[7] [10] [16]	[16]	[4]	[4]	[23]
Optimality and completeness	Guaranteed Global Optimality	[34], [15]	[34]				[15]	[34]		[34]	[15]	[34]				[15]	[15] [34]		[15]			[15]		
	Guaranteed Local Optimality	***[11], [Prop]***	***[Prop]***		[11]			***[11] [Prop]***		***[11] [Prop]***	***[11] [Prop]***		***[11] [Prop]***		[11]		***[Prop]***							
	Guaranteed Completeness	[34], [31], [15]	[31] [34]				[15]	[31] [34]		[31] [34]	[15]	[31] [34]				[15] [31]	[15] [31] [34]		[15] [31]			[15]		
Optimality target	Energy optimality	[35], [34], [31], [25], [15], [11], [4]	[25] [31] [34]		[11]		[4] [15]	[11] [25] [31] [34]		[4] [11] [25] [31] [34]	[4] [11] [15] [25]	[31] [34] [35]	[11] [25]		[11]	[4] [15] [31]	[4] [15] [25] [31] [34] [35]		[4] [15] [31]			[4] [15]	[4]	
	Distance optimality	***[35], [29], [23], [16], [7], [Prop]***	***[29] [Prop]***		[7]	[29]	[16] [23]	***[Prop]***	[29]	***[7] [16] [29] [Prop]***	***[7] [16] [23] [Prop]***	[35]	***[Prop]***	[7]			***[16] [23] [29] [35] [Prop]***	[7]	[7] [16]	[7] [16]	[16]			[23]
	Time optimality	[15], [10], [7], [4]		[10]	[7]		[4] [15]	[10]		[4] [7] [10]	[4] [7] [10] [15]			[7] [10]		[4] [15]	[4] [15]	[7] [10]	[4] [7] [10] [15]	[7] [10]		[4] [15]	[4]	
	Other optimality	***[34], [29], [23], [16], [15], [7], [Prop]***	***[29] [34] [Prop]***		[7]	[29]	[15] [16] [23]	***[34] [Prop]***	[29]	***[7] [16] [29] [34] [Prop]***	***[7] [15] [16] [23] [Prop]***	[34]	***[Prop]***	[7]		[15]	***[15] [16] [23] [29] [34] [Prop]***	[7]	[7] [15] [16]	[7] [16]	[16]	[15]		[23]
Social acceptability	Mention of social norms/concerns	***[34], [23], [Prop]***	***[34] [Prop]***				[23]	***[34] [Prop]***		***[34] [Prop]***	***[23] [Prop]***	[34]	***[Prop]***				***[23] [34] [Prop]***							[23]
Number and Density of obstacles	Maximal tested quantity of "movable obstacles" >= 20	[34], [25], [15], [11]	[25] [34]		[11]		[15]	[11] [25] [34]		[11] [25] [34]	[11] [15] [25]	[34]	[11] [25]		[11]	[15]	[15] [25] [34]		[15]			[15]		
	Maximal tested quantity of "movable obstacles" < 20	***[35], [31], [29], [23], [16], [10], [7], [4], [Prop]***	***[29] [31] [Prop]***	[10]	[7]	[29]	[4] [16] [23]	***[10] [31] [Prop]***	[29]	***[4] [7] [10] [16] [29] [31] [Prop]***	***[4] [7] [10] [16] [23] [Prop]***	[31] [35]	***[Prop]***	[7] [10]		[4] [31]	***[4] [16] [23] [29] [31] [35] [Prop]***	[7] [10]	[4] [7] [10] [16] [31]	[7] [10] [16]	[16]	[4]	[4]	[23]
	Mention of the concept of obstacle density	[25], [11]	[25]		[11]			[11] [25]		[11] [25]	[11] [25]		[11] [25]		[11]		[25]							