TENTATIVE SCHEDULE FOR Planning and Decision-making in Robotics CLASS
Fall 2021

Date	Day	Topic	HW out	HW due
30-Aug	Mon	Introduction; What is Planning?		
1-Sep	Wed	planning representations: explicit vs. implicit graphs, skeletonization, cell decomposition & lattice-based graphs		
6-Sep	Mon	LABOR DAY - NO CLASS		
8-Sep	Wed	search algorithms: A*, Multi-goal A*, Weighted A*, Backward A*		
13-Sep	Mon	search algorithms: Heuristic functions, Multi-Heuristic A*	HW1	
15-Sep	Wed	interleaving planning and execution: Anytime heuristic search, Incremental heuristic search		
20-Sep	Mon	interleaving planning and execution: Real-time heuristic Search		
22-Sep	Wed	case study: planning for autonomous driving		
27-Sep	Mon	planning representations: PRM for continuous spaces		HW1
29-Sep	Wed	planning representations/search algorithms: RRT, RRT-Connect, RRT*	HW2	
4-Oct	Mon	case study: planning for mobile manipulators and legged robots		
6-Oct	Wed	search algorithms: Markov Property, dependent vs. independent variables, Dominance		
11-Oct	Mon	case study: planning for coverage, mapping and surveillance tasks		
13-Oct	Wed	planning representations: state-space vs. symbolic representation for task planning		
18-Oct	Mon	search algorithms: planning on symbolic representations		HW2
20-Oct	Wed	planning under uncertainty: Minimax formulation, Minimax Backward A*	HW3	
25-Oct	Mon	planning under uncertainty: Markov Decision Processes, Value Iteration, RTDP		
27-Oct	Wed	planning under uncertainty: Markov Decision Processes, Value Iteration, RTDP (cont'd)		
1-Nov	Mon	final project proposal presentations		
3-Nov	Wed	planning under uncertainty: Partially-Observable Markov Decision Processes		
8-Nov	Mon	planning under uncertainty: Partially-Observable Markov Decision Processes (cont'd)		HW3
10-Nov	Wed	multi-robot planning		
15-Nov	Mon	multi-robot planning (cont'd)		
17-Nov	Wed	exam		
22-Nov	Mon	planning representations/search algorithms: Planning via Trajectory Optimization		
24-Nov	Wed	THANKSGIVING - NO CLASS		
29-Nov	Mon	learning in planning		
1-Dec	Wed	final project presentations		