





Adaptive Informative Path Planning with Multimodal Sensing

Shushman Choudhury*, Nate Gruver*, Mykel J. Kochenderfer

Real-world applications need information gathering under resource constraints



Adaptive Informative Path Planning models such constrained selection



Prior work does not address the tradeoff between multiple sensing modalities!



We reason jointly about multimodal sensing and movement through online POMDP planning with a tailored rollout





We use an adaptive greedy rollout policy based on Generalized Cost Benefit



We evaluate on two distinct domains



POMCP-GCB outperforms NAIVE and **POMCP-Random across all variations**

Hi, Med, Lo	NAIVE	POMCP]
Distribution		Random	
[1/6, 1/6, 2/3]	295.7	480.0	
[1/3, 1/3, 1/3]	628.3	993.0	
[2/3, 1/6, 1/6]	1104.7	1341.3	

Search-and-Rescue

Rocks	Beacons	p = 0.5		p = 0	.75	
k	b	Random	GCB	Random	GCB	Ra
10	10	21.6	29.4	25.2	38.2	
10	25	23.4	27.8	26.8	41.0	
25	10	45.0	63.6	54.2	87.8	
25	25	41.8	77.0	52.6	105.0	

Information Search RockSample









