

## Quiz\_2 HMM-MDP

Github Link - [https://github.com/Baddala-Govardhan/CSCI485\\_Spring25\\_Govardhan\\_Baddala/tree/main/Quiz\\_2](https://github.com/Baddala-Govardhan/CSCI485_Spring25_Govardhan_Baddala/tree/main/Quiz_2)

### 1. HMM Process

Day	Observation	$? \rightarrow$	Sunny	Cloudy	Rainy
		$V_0(?)$	0.333	0.333	0.333
1	Walk	$P(W ?)$	1.0	0.67	0.33
		$V_1(?) = V_0(?) * P(W ?)$	0.333	0.223	0.111
2		$V_1(S) * P(? S)$	0.000	0.22	0
		$V_1(C) * P(? C)$	0.000	0	0.14
		$V_1(R) * P(? R)$	0.000	0.03	0.03
	Umbrella	$P(U ?)$	0.000	0.33	0.67
		$V_2(?) = \max(?) * P(U ?)$	0.000	0.072	0.09
3		$V_2(S) * P(? S)$	0	0	0
		$V_2(C) * P(? C)$	0.002	0	0.006
		$V_2(R) * P(? R)$	0.029	0.029	0.029
	Walk	$P(W ?)$	1	0.67	0.33
		$V_3(?) = \max(?) * P(W ?)$	0.029	0.019	0.009

## 2. MDP Process

Iteration	State	V(s)	Q(State,C)	Q(State,A)	Policy(s)
0	Low	0			
	Medium	0			
	High	0			
1	Low	-1	-1.18	-0.46	Aggressive (A)
	Medium	3	6.24	6.6	Aggressive (A)
	High	5	9.32	8.96	Conservative (C)
2	Low	-0.46	-0.1432	1.1276	Aggressive (A)
	Medium	6.6	9.6744	10.164	Aggressive (A)
	High	9.32	13.1432	12.6536	Conservative (C)
3	Low	1.12	1.641392	3.267944	Aggressive (A)
	Medium	10.16	12.951984	13.48824	Aggressive (A)
	High	13.14	16.560752	16.024496	Conservative (C)