Name: Khushi Choudhary Subject: MATH/CSCI 485

Q.1. Complete the HMM Forward/Backtracking table (reference in the previous slide) using these transition and emission probabilities.

Day	Observation	? →	Sunny	Cloudy	Rainy
		V0(?)	0.333	0.333	0.333
1	Walk	P(W|?)	1.0	0.67	0.33
		V1(?) = V0(?)*P(W}?)	0.333	0.223	0.111
2		V1(S)*P(?|S)	0.000	0.22	0
		V1(C)*P(?|C)	0.000	0	0.14
		V1(R)*P(?|R)	0.000	0.03	0.03
	Umbrella	P(U|?)	0.000	0.33	0.67
		V2(?) = max(?)*P(U|?)	0.000	0.072	0.09
3		V2(S)*P(?|S)	0	0	0
		V2(C)*P(?|C)	0.002	0	0.006
		V2(R)*P(?|R)	0.029	0.029	0.029
	Walk	P(W|?)	1	0.67	0.33
		V3(?) = max(?)*P(W|?)	0.029	0.019	0.009

Q.2 Construct a table (similar to but not the same as the reference HMM table in the previous slide) that shows the progress of the 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	1.62	3.26	Aggressive (A)

	Medium	10.16	12.94	13.48	Aggressive (A)
	High	13.14	16.54	16.007	Conservative (C)