CS 416
Artificial Intelligence

Lecture 25

Hidden Markov Models

Chapter 15

UNIVERSITY of VIRGINIA

Hidden Markov Models

An attempt to understand Markov Processes

- We know the state of the system at an instant
  - state x_1,x_2, …, x_n at times t_1, t_2, …, t_n
- transitions to new states are only dependent on the current state
  - Use a matrix, A to represent transitions
- the transitions between states are well understood
  - all elements of j are >=0 and <=1
  - parameters are time independent

Transition model

A matrix called A

- a_(i,j) = P (system in state j | system was in state i)

		Tomorrow		
		Sunny(S)	Cloudy(C)	Rainy(R)
Today	Sunny(S)	.7	.2	.1
	Cloudy(C)	.05	.8	.15
	Rainy(R)	.15	.25	.6

Table-1 Weather expectation probabilities.