

Hidden Markov Models

1. Suppose the HMM considered in Example 1 generates the observations:

$$O = Y, R, Y, R$$

at sample times $t = 0, 1, 2, 3$, respectively. Find the probability $Pr(O|\lambda)$ using the forward-backward algorithm. You may do this problem by hand or on a computer. Show the values of the forward variable over time.

2. Find the most likely state sequence for the observation in part 1 using the Viterbi algorithm. This is probably most easily done by hand. Show your calculations.