

CS1950-L HW7

Due: Thursday, April 21st 2:30pm

0 Dishonest Casino: Coin Problem

A dishonest casino uses either a fair or a biased coin. The fair coin comes out heads or tails with equal probability. The biased coin comes out heads with probability $\frac{4}{5}$ and tails with probability $\frac{1}{5}$. The probability of transitioning from a biased to a fair coin and from a fair to a biased coin is $\frac{1}{5}$. The casino is equally likely to start in the fair or biased state.

Implement the Viterbi algorithm using the previously defined HMM to find the most probable explanation of hidden states that generate the following sequences of coin tosses

1. HHHHHHHHHHHHHHHHHHHHTTTTTTTTTTTTTTTT
2. HHTHHTHHHTHTTTHTHTTTHTTHTTTHHTHTTTHTHTTTHHHHTHTHHH
3. HHTHHTHHHTHTTTHTHTTTHTTHTTTHHTHTTTHTHTTTHHHHTHTHHHT

Using the output from (2) and (3) above, argue why it may not always be best to only report the most likely explanation.

1 Assembly Clean-Up

This week you may choose to clean up any code, implement any functionality you may have missed, or answer any of the questions you did not answer. It might be a good idea to make sure you can assemble the smaller genome from Homework 5 with ideal parameters (e.g. read length = 500, error rate = 0, coverage = 10) with 1 contig. Regardless of whether or not you decide to rework your code, please send us an executable or a runnable script including examples or instructions on how to run your assembler. Final grades for the completed assembler will be computed next Thursday at the latest.