

Quiz Instructions

Instructions:

Please write it in a paper/pdf and upload via carmen:



Question 1

30 pts

A professor wants to know if students are getting enough sleep. Each day, the professor observes whether the students sleep in class, and whether they have red eyes.

Let, on day t .

- S_t be the random variable of the student having enough sleep,
- R_t be the random variable for the student having red eyes, and
- C_t be the random variable of the student sleeping in class

The professor has the following domain theory:

- The prior probability of getting enough sleep at time t , with no observations, is 0.6
- The probability of getting enough sleep on night t is 0.9 given that the student got enough sleep the previous night, and 0.2 if not
- The probability of having red eyes is 0.1 if the student got enough sleep, and 0.7 if not
- The probability of sleeping in class is 0.2 if the student got enough sleep, and 0.4 if not

Formulate the problem as a hidden Markov model. Provide a diagram and complete probability tables for the model.

Upload

Choose a File