Assignment 10

Chaz Del Prato
Computer engineering and Computer Science
California State University Long Beach
chaz.delprato@student.csulb.edu

1 Solutions

1a. Calculate the value of P(b,i,¬m,g,j).

- P(b)P(i|b, ¬m)P(¬m)P(g|i,b,¬m)P(j|g)
- 0.9 x 0.5 x 0.9 x 0.8 x 0.9
- **0.2916**

1b. Calculate the probability that someone goes to jail given that they broke the law, have been indicted, and face a politically motivated prosecutor.

- $\frac{(0.9x0.9)+(0.1x0.0)}{(0.9x0.1)+(0.1x0.0)+(0.9x0.9)+(0.1x1.0)}$
- ≈ 0.81

2. Find p.

- **p = < 0.8967, 0.1033 >**

3a. Bayesian network and conditional distributions.

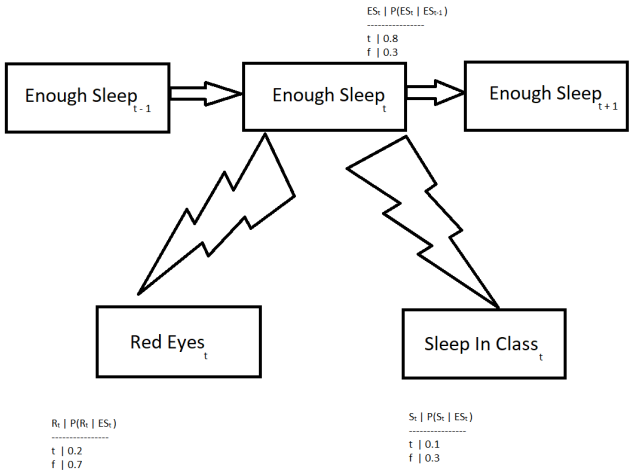

Figure 1: Bayesian network and conditional distributions.

3b. Compute. $\overrightarrow{P}(\text{ES}_2 \mid \overrightarrow{e}_{1:2})$ and $\overrightarrow{P}(\text{ES}_1 \mid \overrightarrow{e}_{1:3})$

- $\overrightarrow{P}(\mathbf{ES}_2 \mid \overrightarrow{e}_{1:2}) = <\mathbf{0.5, 0.5}>$
- $\overrightarrow{P}(\mathbf{ES}_1 \mid \overrightarrow{e}_{1:3}) = <\mathbf{0.714, 0.286}>$