PMR lecture notes

January 29, 2014

Chapter 1

Prerequisites

1.1 Joint probability distribution

A joint probability distribution is the PD of two random variables. This must sum to 1 as the probability of some combination must be 1.

If there are only two random variables, this is known as a bivariate distribution. If there are more than two variables this is known as a multivariate distribution.

Chapter 2

Belief networks

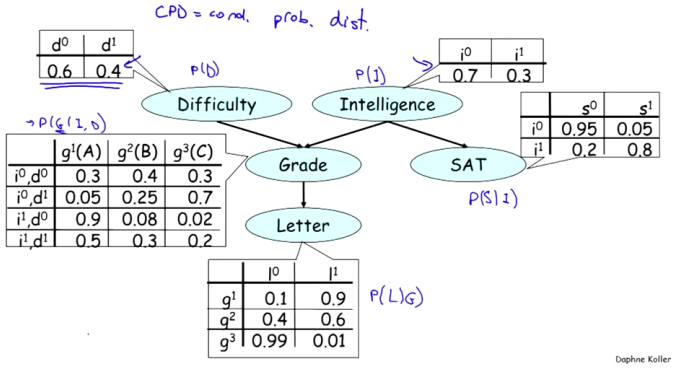

Figure 2.1: Bayes network with CPD details

This is an example of a bayesian network. The probabilities are dependent on each other.

Definition: Chain rule

The chain rule takes all of the CPD's and multiplies them together

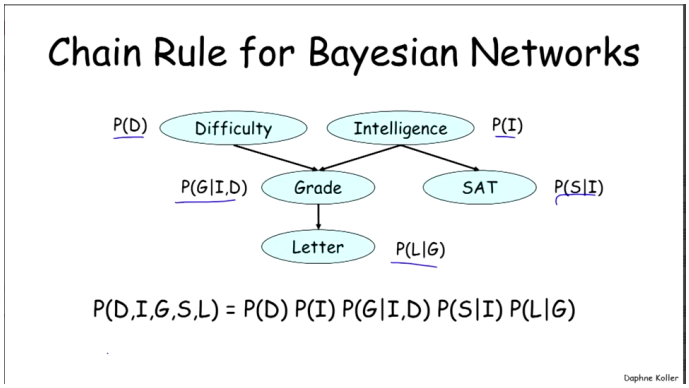

Figure 2.2: Bayes network with CPD details

Chapter 3

Questions

3.1 Belief networks

3.1.1 Question 1

What is $P(d^0, i^1, g^3, s^1, l^1)$?

Using the two images for information:

$i^1 = 0.3$

$d^0 = 0.6$

$l^1 = 0.01$

$g^3 = 0.02$

$s^1 = 0.8$

And we can multiply these together to get the answer.

Chapter 4

Glossary

Definition: CPD

Conditional probability distribution