Bayesian Network Self-Check

605.645 – Artificial Intelligence

The purpose of this self-check is to make sure you understand key concepts for the algorithms presented during the module and to prepare you for the programming assignment. As you work through problems, you should always be thinking "how would I do this in code? What basic data structures would I need? What operations on those basic data structures?"

Naive Bayes Classifier

Suppose we have the following training data where Shape, Size and Color are the features (attributes) and Safe? is the class label:

#	Shape	Size	Color	Safe?
1	round	large	blue	no
2	square	large	green	yes
3	square	small	red	no
4	round	large	red	yes
5	square	small	blue	no
6	round	small	blue	no
7	round	small	red	yes
8	square	small	green	no
9	round	large	green	yes
10	square	large	green	yes
11	square	large	red	no
12	square	large	green	yes
13	round	large	red	yes
14	square	small	red	no

15	round	small	green	no

1. Calculate the probabilities required for a Naive Bayes Classifier.

2. What is the normalized probability distribution over the possible class labels for the example:

16	square	large	red	

?